

The genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae) in Southern Africa. Part III. New and Little Known Species with Incomplete Venation

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Abstract.—In this publication, the third of a projected series revising the Afrotropical (essentially southern African) species of the genus *Quartinia* Ed. André, 1884 (Hymenoptera: Vespidae: Masarinae), seventeen species are dealt with. Twelve new species from Namibia are described. They are: *bella*, *clypeata*, *codoni*, *maculipennis*, *mandibulata*, *parva*, *pteroniae*, *pulawskii*, *setosa*, *tuberculifera*, *tuberculiventris* and *tuberculiventroides*.

With regard to five known species, *albopicta* (Richards), *diana* (Richards), *minima* Schulthess, *poecila* Schulthess and *propinqua* Schulthess, the descriptions of *albopicta* and *diana* are augmented by those of the hitherto unknown males, the descriptions of *minima* and *poecila* are corrected with reference to the type material and are augmented, in the case of *minima*, by an account of intra specific variation shown by a large sample from the seaboard of the Namib north of Swakopmund and, in the case of *poecila*, by an account of a remarkable geographic cline in colour pattern shown by specimens collected from localities ranging from Swakopmund (the type locality) in the north to Hondeklip Bay in the south.

Extensive collecting data pertaining to all seventeen species contribute to the knowledge of their distribution and floral associations.

An addendum to species described by Gess (2007) gives additional collecting data for *Q. bonaespei*, *Q. conchicola* and *Q. vexillata*.

I am very pleased to have the opportunity to record in this Festschrift my appreciation and gratitude to Roy Snelling for his generosity in 2001 when, in his personal capacity, he contributed towards the cost of replacing the deficient cabinets which up to that time housed the Hymenoptera collection of the Entomology Department of the Albany Museum.

The background to the present state of knowledge of the taxonomy of the genus *Quartinia* Ed. André, 1884 has been fully stated in Gess (2007).

Desirable as it might be to undertake a complete revision of the genus, this is at present not practicable. Rather than to get bogged down in a study which might never be completed and published, it is intended to publish a series of papers describing new species as well as review-

ing some known species. It is envisioned that a new key to species will complete the series. To date Parts I and II have been published as Gess (2007) and Gess (2008) respectively.

Quartinia species range in length from a little over 2 mm to 7 mm. In comparison with the great majority of species of other genera of Masarinae even the largest *Quartinia* are relatively small. In view of the considerable range in size shown by species of *Quartinia* and in order to express relative size, categories based on length have been established for species of the genus. These are: minute (1.5–2.5 mm); small (2.5–3.5 mm); medium (3.5–4.5 mm); large (4.5–5.5 mm); very large (5.5–6.5 mm); and gigantic (6.5–7.5 mm).

The present paper deals with species with incomplete venation (*2m-cu* present

but attenuate and interrupted)—that is species which in the past would have been placed in *Quartinioides* Richards, 1962 but synonymized with *Quartinia* Ed. André by van der Vecht and Carpenter (1990).

While the present paper was in preparation I received a request from Ms. Candice Lyons, a Masters student of the University of Cape Town, to help with the determination of a large number (over 1100) of specimens of various species of *Quartinia* derived from her study of the measure of success of restoration techniques on two strip-mining sites on the Namaqualand coast—one a De Beers mine in the Northern Cape and the other the Namaqua Diamond Company mine in the Western Cape. In return for the determinations Ms. Lyons kindly agreed to house her voucher material in the Albany Museum and to allow me to use it and the associated data for my own purposes. In doing so, I have reduced the co-ordinates, as given by her, to the nearest minute in keeping with the way in which co-ordinates are given by myself. In the present paper additional data derived from this material will be found under *Q. poecila* and in the addendum to species described by Gess (2007) under *Q. conchicola* and *Q. vexillata*.

In the addendum also is given the collecting data of an additional specimen of *Q. bonaespei* collected by myself in 1960 and found amongst material on loan from the South African Museum.

Acronyms for institutions in which material is housed are: AMG = Albany Museum, Grahamstown, South Africa; AMNH = American Museum of Natural History, New York, United States of America; BMNH = Natural History Museum, London, England; CAS = California Academy of Sciences, San Francisco, United States of America; FSCA = Florida State Collection of Arthropods, Gainesville, United States of America; NCP = National Collection of Insects, Pretoria, South Africa; NNIC = Namibian National Insect

Collection, Windhoek, Namibia; SAM = South African Museum, Iziko Museums of Cape Town, South Africa.

DESCRIPTION OF SPECIES AND COLLECTION DATA

Quartinia albopicta (Richards)

Quartinioides albopicta Richards, 1982: 199, ♀.

Holotype: ♀, Namibia: Gobabeb (Zoological Museum, Copenhagen).

Diagnosis.—Small (2.5–3.5 mm long). Fore wing with Cu1a and 2*m-cu* thin, very pale to transparent. Tegula with posterior inner corner inwardly produced, yellow (except for pale testaceous discal spot). Both sexes with head and thorax extensively yellow marked, gaster predominantly yellow. Head with following yellow: entire clypeus; broad band from bottom of one ocular sinus to the other, medially broadly connected to the clypeus; occipital band from gena to gena, extending down almost to malar space. Mesoscutum with four longitudinal yellow streaks, namely medial pair (broadly fused basally) and lateral pair flanking tegulae; medial and lateral streak of each side anteriorly produced and meeting in a smoothly rounded loop on anterior third of mesoscutum.

Description.—*Female* (additional to Richards' description): Head $1.28 \times$ as wide as long (average of 5; range 1.26–1.31). Clypeus $1.32 \times$ as wide as long (average of 5; range 1.28–1.34).

Male (hitherto undescribed): Very similar in coloration and colour pattern to female, most noticeably differing in: the more abruptly set off darker distal half of the antennal club; the almost complete replacement by yellow of the black area surrounding the antennal socket (that is on the frons above the socket, on the side of the clypeus and on the paraocular area); the yellow base of the mandible; the lighter colour of the sterna. Length 2.5–2.9 mm; length of fore wing 1.7–1.9 mm; hamuli 4.

Head $1.37 \times$ as wide as long (average of 3; range 1.34–1.40). Clypeus $1.44 \times$ as wide as long (average of 3; range 1.38–1.50); clypeal dorsal margin attaining level of a line joining the dorsal margins of the antennal sockets; distal margin deeply emarginate and widely lamellate (especially distolaterally) and with pigmented part distomedially very slightly raised and protruding into lamella; disk with sides rising steeply from paraocular area, distolaterally with long, inwardly curved, conspicuous setae. Labrum with a pronounced median carina, conspicuously and densely setose (especially immediately flanking carina); distal margin medially subangular.

Tergum VII with a shallow V-shaped apical incision, the lobes defining it rounded; apical margin of sterna VII + VIII with a narrow black median projection; parameres flattened, wide, distally with outer margin smoothly rounded to apex and inner margin with an emargination producing a proximal tooth and an apical hook.

Material examined.—NAMIBIA: Kuiseb River Delta near Rooibank (23.12S 14.39E), 18.iii.1983 (Nat. Coll. Kuiseb Survey), 21 ♂♂, 10 ♂♂ (all visiting flowers of *Trianthema hereroensis* Schinz, Aizoaceae: non-Mesembryanthema) [NCP]; Walvis Bay, 22.ii.1990 (W. J. Pulawski), 1 ♀, 12 ♂♂ [CAS]; Half Shaft Camp (23.41S 14.04E) [locality not traced; co-ordinates place it in the Atlantic], 1–7.iv.1986 (E. Griffin), 1 ♂ (Pres. pitfall traps) [NNIC]; 11 km S of Swakopmund on inland side of road B2 to Walvis Bay (22.46S 14.32E), 7.iv.2002, 60 ♀♀, 12 ♂♂; same locality, 14.iv.2002, 18 ♀♀, 1 ♂; same locality, 20.iv.2002, 27 ♀♀, 14 ♂♂; same locality, 30.iii.2004, 74 ♀♀, 13 ♂♂ (all F. W. and S. K. Gess) (all visiting pink flowers of *Trianthema hereroensis* Schinz, Aizoaceae: non-Mesembryanthema) [AMG].

Provenance of specimens examined by Richards (1962).—NAMIBIA: Gobabeb (25.36 S 15.10E) on downs.

Geographic distribution.—Known only from Namibia, from the vicinity of the Kuiseb drainage system which forms the

northern limit of the Southern Namib of Giess (1971).

Floral associations.—Known only in association with *Trianthema hereroensis* Schinz (Aizoaceae: non-Mesembryanthema).

Nesting.—Unknown; possibly in the sand hummocks formed beneath the *Trianthema* plants.

Discussion.—Richards (1981) in comparing the structure of *Q. albopicta* with that of *Q. minima* von Schulthess correctly states that the head in front view is rather wider. However, his statement that the clypeus [of *albipicta*] is rather wider compared with its height [than is that of *minima*] is incorrect, the opposite being true. The error can be explained if comparison is made not with the holotype of *minima* but with the incorrect proportions for both head and clypeus given by Richards (1962) in his re-description of that species. [See also under *Q. minima* in the present publication.]

At the site 11 km S of Swakopmund on inland side of road to Walvis Bay (22.46S 14.32E) *Q. albopicta* was on all occasions found together with the much larger *Q. femorata* Gess, likewise visiting the flowers of *T. hereroensis* (see Gess 2007).

Quartinia bella Gess, new species (Figs 1–3)

Quartinia sp. N5, Gess and Gess, 2003: 68 (flower visiting).

Diagnosis.—Small to medium sized (3.3–3.6 mm). Fore wing with Cu1a and 2*m-cu* present but attenuate, much thinner than other veins, and with 2*m-cu* interrupted before reaching M. Tegula with posterior inner corner inwardly produced. Both sexes black, reddish-brown (in many but not all specimens) and yellowish-white. Male with labrum carinate, tergum VII laterally distinctly angulate and apically usually with a narrow V-shaped incision, and sternum I postero-medially raised and produced into a small conical tubercle.

Description.—*Female* (Figs 1, 2): Black. The following are yellowish-white: under-



Figs 1–3. *Quartinia bella*: 1, ♀, dorso-lateral view ($\times 12$); 2, ♀, head, front view ($\times 26$); 3, ♂, head, front view ($\times 26$).

side of antenna; two small supra-clypeal spots [in one specimen only]; small crescent at bottom of ocular sinus; small streak on temple behind upper part of eye; hind margin of pronotum (to postero-dorsal angle) and spot on humeral angle of same; small spot at top of mesopleuron; anterior and posterior parts of tegula; spot postero-medially on disk of scutellum; scutellar lamella; propodeal angles; narrow posterior bands (slightly expanded medially but not quite reaching sides) on terga I–VI; apex of femur and base of tibia of fore leg. Reddish-brown are: mandible; upperside of antenna; in some specimens most of pronotum other than for yellowish-white

markings [in other specimens ground colour mostly black or black throughout]; diffuse area on upper part of mesopleuron; median region of tegula; in some specimens diffuse spot on each side of scutellar disk [in other specimens ground colour black]; entire propodeum [in one specimen only]; entire gaster other than for yellowish-white bands; most of tibia and tarsus of all legs. Wings very lightly browned; veins brown.

Length 3.3–3.6 mm (average of three specimens: 3.47 mm); length of fore wing 2–2.4 mm (average of three: 2.16 mm); hamuli 4–5.

Head in front view $1.2 \times$ as wide as long (average of three specimens); finely microreticulate (shagreened), moderately shiny; frons and vertex with small, indistinct, shallow punctures separated by their width or more. POL: OOL = 1: 0.8. Clypeus $1.6 \times$ as wide as long; anterior margin shallowly and widely emarginate; antero-lateral angles rounded.

Mesosoma microreticulate, moderately shiny, with punctures, particularly on mesonotum, slightly larger but much more distinct than on frons.

Gaster shiny, not obviously microreticulate or punctured.

Male (Fig. 3): Black. The following are yellowish-white: mandible; underside of antenna (except last two flagellomeres); labrum; clypeus; large marking on lower half of frons (contiguous with yellowish-white clypeus) either roughly transversely oval and centrally including a small dark brown spot or [in a minority of specimens] broadly U-shaped; paraocular region below antennal insertion and dorsally widening streak in ocular sinus [in some specimens these two pale areas narrowly connected]; large streak on temple behind upper part of eye; hind margin of pronotum (to postero-dorsal angle) and spot on humeral angle of same; small spot at top of mesopleuron; anterior and posterior parts of tegula; spot postero-medially on disk of scutellum; scutellar lamella; propodeal

angles; narrow posterior bands (slightly expanded medially but not quite reaching sides) on terga I–VI. Reddish-brown are: upper side of scape, pedicel and proximal flagellomeres; in some specimens most of pronotum other than for yellowish-white markings [in other specimens ground colour black]; median region of tegula; in some specimens most of scutellar disk other than for postero-medial yellowish-white spot and ill defined light brown spot on each side [in other specimens ground colour black and lateral spot absent]; in same specimens entire gaster other than for yellowish-white bands [in other specimens declivous face of tergum I only; in others again ground colour black throughout].

Length 3.3–3.4 mm (average of 3: 3.37); length of fore wing 2.1–2.2 mm (average of 3: 2.17 mm); hamuli 5.

Head in front view $1.33 \times$ as wide as long (2 specimens).

Clypeus $1.64 \times$ as wide as long (2 specimens); clypeal dorsal margin attaining a level only slightly exceeding an imaginary line joining dorsal margins of antennal sockets; distal margin widely and shallowly emarginate, narrowly lamellate. Labrum with a median carina.

Tergum VII with hind margin smooth and narrowly lamellate, laterally distinctly angulate and apically with a narrow V-shaped incision [incision in specimen from 20 km S of Omaruru reduced to a small notch and in that from 26 km W of Kamanjab totally lacking]. Sternum I postero-medially raised and produced into a small conical tubercle.

Etymology.—The name *bella*, a Latin adjective meaning pretty, is intended to draw attention to the attractive appearance of the species.

Material examined.—Holotype: ♂, NAMIBIA: between Gaub and Kuiseb passes (23.27S 15.46E), 13.iii.2000 (F. W. and S. K. Gess) (visiting yellow flowers of *Adenolobus pechuelii* (Kuntze) Torre and Hillc., Fabaceae, Caesalpinioideae) [AMG]. Paratypes: NAMIBIA: 26 km W of Kamanjab (19.36S 14.28E), 7.iv.1998, 1 ♂

(visiting purple flowers of *Aptosimum angustifolium* Weber and Schinz, Scrophulariaceae); 120 km from Khorixas on road to Palm (20.17S 14.05E), 8.iv.1998, 19 ♀♀, 2 ♂♂ (13 ♀♀, 2 ♂♂ visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae); 4 ♀♀ visiting white flowers of *Boerhavia deserticola* Codd, Nyctaginaceae; 2 ♀♀ visiting pink flowers of *Gisekia africana* (Lour.) Kuntze, Moluginaceae); 20 km S of Omaruru by road to Karibib (21.35S 15.59E), 24.iii.1997, 1 ♀, 1 ♂ (visiting purple flowers of *Aptosimum arenarium* Engl., Scrophulariaceae); 12 km SW of Usakos (21.59S 19.29E), 23.iii.1997, 1 ♀ (visiting purple flowers of *Aptosimum arenarium*); 34 km SW of Usakos (22.02S 15.17E), 22.iii.1997, 11 ♀♀ (5 ♀♀ visiting yellow flowers of *Zygophyllum simplex*; 6 ♀♀ visiting purplish pink flowers of *Sesuvium* cf. *hydaspicum* (Edgw.) Gonc., Aizoaceae: non-Mesembryanthema); 117 km from Swakopmund on road to Usakos (22.02S 15.17E) [this is the same locality as the previous one], 16.iii.2000, 9 ♀♀ (visiting pink flowers of *Sesuvium* cf. *hydaspicum*); between Kuiseb and Gaub passes (23.20S 15.52E), 20.iii.2000, 3 ♀♀, 1 ♂ (visiting yellow flowers of *Tripteris microcarpa* (Harv.) T. Norl., Asteraceae); between Kuiseb and Gaub passes (23.24S 15.50E), 22.iii.1999, 5 ♀♀ (visiting white flowers of *Zygophyllum cylindrifolium* Schinz, Zygophyllaceae); between Kuiseb and Gaub passes (23.27S 15.46E), 22.iii.1999, 5 ♀♀ (3 ♀♀ visiting yellow flowers of *Zygophyllum simplex*; 2 ♀♀ visiting white flowers of *Zygophyllum cylindrifolium*); between Gaub and Kuiseb passes (23.27S 15.46E) [this is the same locality as the previous one], 13.iii.2000, 36 ♀♀, 36 ♂♂ (30 ♀♀, 32 ♂♂ visiting yellow flowers of *Adenolobus pechuelii* (Kuntze) Torre and Hillc., Fabaceae, Caesalpinioideae); 5 ♀♀, 1 ♂ visiting pink flowers of *Indigofera auricoma* E. Mey., Fabaceae, Papilionoideae; 1 ♀, 3 ♂♂ visiting purple/violet flowers of *Aptosimum spinescens* (Thunb.) Weber, Scrophulariaceae)–(all F. W. and S. K. Gess) [all AMG]; Namib National Park, Homeb [locality not traced], 23.i.1988 (R. Miller and L. Stange) 10 ♀♀ [FSCA].

Geographic distribution.—Known from Namibia from localities spanning four degrees of latitude and falling in the Mopane Savanna, Thornbush Savanna, Semi Desert and Savanna Transition (Escarpment Zone) and Central Namib of Giess (1971).

Floral associations.—Recorded from seven plant families: Aizoaceae: non-Mesembryanthema (*Sesuvium*); Asteraceae (*Tripteris*); Fabaceae, Caesalpinoideae (*Adenolobus*); Fabaceae, Papilionoideae (*Indigofera*); Moluginaceae (*Gisekia*); Nyctaginaceae (*Boerhavia*); Scrophulariaceae (*Aptosimum*); Zygophyllaceae (*Zygophyllum*).

Nesting.—Unknown.

Discussion.—The species in both sexes shows considerable variation in colour pattern within a sample of a single population. This is a consequence of varying degrees of melanism in which the reddish-brown ground colour is partially or wholly replaced by black. This affects the colour pattern of the pronotum, scutellum and, in the males, the gaster. Variable also in the males is the shape of the supra-clypeal marking as indicated in the description.

With regard to morphology, the male shows considerable variation in the state of the apex of tergum VII: with a narrow V-shaped incision (the condition in the majority of the specimens examined); with the incision reduced to a small notch; without either incision or notch.

Quartinia clypeata Gess, new species
(Figs 4, 5)

Quartinia sp. N6 Gess and Gess, 2003: 68 (flower visiting)

Diagnosis.—Small (2.6–3.5 mm). Fore wing with *Cu1a* and *2m-cu* present but attenuate, much thinner than other veins and with *2m-cu* interrupted before reaching M. Tegula with posterior inner corner rounded, not inwardly produced. Female with head, other than for narrow yellowish-white streak on temple, completely black (notably lacking pale marking in ocular sinus); male likewise but clypeus in some specimens asymmetrically marked by a number of small spots or by a single larger one. Male with distinct, rounded, median carina on lower half of clypeus (Figs 4, 5).



Figs 4, 5. *Quartinia clypeata*: 4, ♂, head, front view; 5, ♂, portion of clypeus showing median carina.

Description.—*Female*: Black. The following are yellowish-white: underside of flagellomeres (except ultimate); narrow streak on temple behind upper part of eye; medially interrupted band on anterior margin of pronotum and postero-dorsal angle of same (these markings in some specimens narrowly connected); in some specimens small spot on humeral angle; in some specimens narrow streak anteriorly on mesopleuron; tegula anteriorly and posteriorly (median part dark brown); median spot posteriorly on disk of scutellum and medially interrupted band on

lamellate margin of same; in some specimens propodeal angle; posterior bands, reaching sides, on terga I–IV or V; apex of femur and dorsal streak on tibia (or in some specimens almost entire tibia and tarsomeres) of all legs. Various shades of reddish-brown are: mandible; upper surface of antenna; in some specimens clypeus distally and clypeal lamella; in some specimens gaster partially (especially sides of terga, entire sterna).

Length 3.2–3.5 mm (average of 3: 3.3 mm); length of fore wing 2.2 mm; hamuli 4.

Head in front view $1.2 \times$ as wide as long. POL: OOL = 1: 0.64. Clypeus, frons and vertex microreticulate (shagreened) without discernable punctures; mesonotum microreticulate and with small punctures (interstices equal to or exceeding puncture width).

Male (Figs 4, 5): In coloration and markings very similar to female. Most males, like all females, with head, other than for narrow yellowish-white streak on temple, completely black; a few males with clypeus asymmetrically marked by a number of small spots or by a single larger one. Labrum pale. Tergum VI with yellowish-white posterior band; tergum VII reddish-brown with area around apical incision paler. Surface sculpture as in female.

Length 2.6–3.0 mm (average of 3: 2.87). fore wing 1.8 mm.

Head in front view $1.32 \times$ as wide as long. Clypeus $1.36 \times$ as wide as long; clypeal dorsal margin attaining a level only slightly exceeding an imaginary line joining dorsal margins of antennal sockets; distal margin narrowly lamellate, widely and shallowly emarginate and laterally smoothly rounded; clypeal disk convexly raised, with a distinct, rounded, median carina on lower half (Figs 4, 5). Labrum with a poorly developed, rounded, median carina.

Tergum VII with short V-shaped excision and rounded lateral lobes. Sterna unmodified.

Etymology.—The name *clypeata* serves to draw attention to the uniquely modified clypeus of the male.

Material examined.—Holotype: ♂, SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Koeroegabvlakte (28.11S 17.03E), 17–21 and 24.ix.1995 (F. W., S. K. and R. W. Gess) (visiting pale white-pink flowers of *Prenia sladeniana* (L. Bol.) L. Bol., Aizoaceae: Mesembryanthema) [AMG]. Paratypes: NAMIBIA: E of Oranjemund, 37 km from checkpoint on road to Sendelingsdrif (28.23S 16.44E), 24.ix. 1997, 7 ♀♀, 1 ♂ (3 ♀♀, 1 ♂ visiting yellow flowers of *Tripteris* sp., Asteraceae; 2 ♀♀ visiting white flowers of *Juttadinteria elizae* (Dinter and A. Berger) L. Bolus, Aizoaceae: Mesembryanthema; 2 ♀♀ visiting purple/violet flowers of *Aptosimum spinescens* (Thunb.) Weber, Scrophulariaceae); E of Oranjemund, 34 km from checkpoint on road to Sendelingsdrif (28.24S 16.44E), 25 and 26.ix. 1997, 28 ♀♀, 6 ♂♂ (15 ♀♀, 6 ♂♂ visiting cream flowers of *Sarcocaulon* sp., Geraniaceae; 3 ♀♀ visiting yellow flowers of *Tripteris* sp.; 7 ♀♀ visiting white flowers of *Pteronia glabrata* L. f., Asteraceae; 3 ♀♀ visiting white flowers of *Brownanthus pubescens* (N. E. Br. ex C. A. Maas) Bullock, Aizoaceae: Mesembryanthema)–(all F. W. and S. K. Gess) [all AMG]; SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Pootjiespram (28. 05S 16.57E), 16.ix.1995 (F. W., S. K. and R. W. Gess), 4 ♀♀, 1 ♂ (visiting yellow flowers of *Cleome paxii* (Schinz) Gilg and Ben., Brassicaceae); Richtersveld National Park, Koeroegabvlakte (28.11S 17.03E), 17–21 and 24.ix.1995 (F. W., S. K. and R. W. Gess), 15 ♀♀, 6 ♂♂ (13 ♀♀, 3 ♂♂ visiting pale white-pink flowers of *Prenia sladeniana* (L. Bol.) L. Bol., Aizoaceae: Mesembryanthema; 2 ♀♀ visiting yellow flowers of *Gorteria* sp., Asteraceae; 1 ♂ visiting pale yellow flowers of *Cotula* sp., Asteraceae; 1 ♂ visiting yellow flowers of *Leysera tenella* DC., Asteraceae; 1 ♂ in deep-violet flower of *Peliostomum leucorrhizum* E. Mey. ex Benth., Scrophulariaceae); Richtersveld, 4 km N Annis River crossing by road to Sendelingsdrif (28.23S 16.55E), 21.ix.1997 (F. W. and S. K. Gess), 5 ♀♀, 6 ♂♂ (visiting dark-pink flowers of *Drosanthemum* sp., Aizoaceae: Mesembryanthema); Namaqualand: 39 km E Springbok [29.31S 18.17E], 1.x.1997 (F.W. and S. K. Gess), 1 ♂ (visiting pink flowers of *Stoeberia* sp., Aizoaceae: Mesembryanthema)–[all AMG].



Figs 6–9. *Quartinia codoni*: 6, ♀, dorsal view ($\times 12$); 7, ♂, dorsal view ($\times 12$); 8, ♀, head, front view ($\times 26$); 9, ♂, head, front view ($\times 26$).

Geographic distribution.—Known from Namibia from the extreme south of the Desert and Succulent Steppe (Winter rainfall region) of Gess (1971) and from the adjoining Northern Cape of South African from the Richtersveld and Northern Bushmanland.

Floral associations.—Recorded from five plant families: Aizoaceae: Mesembryanthema (*Brownanthus*, *Drosanthemum*, *Jutta-dinteria*, *Prenia*, *Stoeberia*); Asteraceae (*Cotula*, *Gorteria*, *Leysera*, *Pteronia*, *Tripteris*); Brassicaceae (*Cleome*); Geraniaceae (*Sarco-caulon*); Scrophulariaceae (*Aptosimum*, *Peliostomum*).

Nesting.—Unknown.

Quartinia codoni Gess, new species
(Figs 6–9)

Quartinioides sp. 2A, Gess and Gess, 2003: 74 (flower visiting).

Diagnosis.—Medium to large (4.2–5.0 mm). Fore wing with Cula and 2*m-cu* present but attenuate, much thinner than other veins, and with 2*m-cu* interrupted before reaching M. Both sexes with oblique pale streak on each side of vertex in addition to pale streak on temple behind

upper part of eye (Figs 6, 7). Male with posterior margin of sterna VII + VIII medially with a narrow, black, rectangular lamella; distal margin of lamella extending posteriorly as far as postero-lateral angles of sterna.

Description.—*Female* (Figs 6, 8): Black. Yellow are: transverse mark (in many specimens bilobed, in some specimens reduced to pair of small to minute spots) on proximal border of clypeus flanking clypeo-frontal suture; small spot (in some specimens absent) on each side of clypeal disk; pair of spots on lower half of frons, entire ocular sinus; streak on temple behind upper part of eye; oblique streak on each side of vertex (Fig. 6) (in great majority of specimens separate from streak behind eye, in small minority narrowly joined); entire hind margin of pronotum (to postero-dorsal angle) and spot on humeral angle of same (spot in some specimens narrowly joined to anterior transverse band); spot (in many specimens crescent-shaped) antero-laterally on mesonotum, narrow streak (in some specimens absent) laterally flanking tegula and pair of subtriangular spots (in some specimens joined to form a broadly U-shaped transverse

marking; in a minority of others reduced to a scattering of minute spots or totally absent) postero-medially on same; posterior band on scutellar disk (widened and rounded laterally and anteriorly pointed medially—thus leaving a bilobed black area basally); scutellar lamella laterally; large band anteriorly on mesopleuron; propodeal angle; posterior bands reaching sides on terga I–V (those on terga II–V generally widened laterally and medially); apex of femur and base of tibia of all legs. Various shades of reddish-brown are: labrum, mandible; antenna, terga (other than for yellow bands), sterna, most of legs. Wings hyaline; veins brown.

Length 4.4–5.0 mm (average of 5: 4.7 mm); length of fore wing 2.7–3.2 mm (average of 5: 3.0 mm); hamuli 5.

Head in front view $1.33 \times$ as wide as long (average of 3); finely microreticulate (shagreened), moderately shiny, without obvious punctures. POL: OOL = 1: 0.8. Clypeus $1.6 \times$ as wide as long; anterior margin shallowly and widely emarginate; antero-lateral angles rounded.

Mesosoma microreticulate, moderately shiny, with small, shallow punctures variously separated by less than to twice puncture width.

Gaster microreticulate, moderately shiny, with small shallow punctures decreasing in size posteriorly.

Setae on head and mesosoma fine, short; those on gaster, particularly on tergum I, longer, posteriorly directed.

Male (Figs 7, 9): Black. Yellow are: underside of antenna; mandible except extreme base; labrum; clypeus; narrow paraocular streak (ventrally angularly widened at mandibular articulation and dorsally merging with infilling of ocular sinus); transverse band across lower half of frons, consisting of infilling of ocular sinus of each side fused with pair of large subquadrate markings (leaving black only a streak above antennal insertion and a small, sub-oval, medio-ventral spot and in some specimens a thin median line above

it); in some specimens an upward extension of the transverse band along inner upper margin of eye; streak on temple behind upper part of eye; oblique streak on each side of vertex (Fig. 7) (in great majority of specimens separate from streak behind eye, in small minority narrowly joined to it and/or to streak along inner upper margin of eye); anterior margin of pronotum fused laterally with large humeral spot; entire hind margin of pronotum (to postero-dorsal angle; crescent-shaped marking antero-laterally on mesonotum, narrow streak laterally flanking tegula and pair of subtriangular spots (in most specimens joined to form a broadly U-shaped transverse marking) postero-medially on same (these discrete markings in many specimens bilaterally uninterruptedly fused by the narrow posterior extension of the ends of each antero-lateral crescent to join respectively the narrow parategular streak and the anterior extension of each arm of the U-shaped transverse postero-medial marking); posterior band on scutellar disk (widened and rounded laterally and anteriorly pointed medially—thus leaving a bilobed black area basally); scutellar lamella laterally; large band anteriorly on mesopleuron; propodeal angle; posterior bands reaching sides on terga I–VI (that on I wider than those on II–VI; all widened laterally and medially); apex of femur and base of tibia of all legs. Various shades of reddish-brown are: upper surface of antenna, terga other than for yellow bands (I–V generally dark to very dark medially, lighter laterally; VI light, particularly around incision); sterna, most of legs.

Melanistic specimens, particularly those from the Richtersveld have the basal half of the mandible black; lack most or all of the paraocular streak; have the band across the lower half of the frons reduced to the infilling of the ocular sinus and to a pair of discrete subquadrate markings; and do not show the uninterrupted fusion of the mesonotal markings.

Length 4.2–4.3 mm (average of 5: 4.25); length of fore wing 2.8 mm; hamuli 5.

Head in front view $1.38 \times$ as wide as long (average of 3); finely microreticulate (shagreened), moderately shiny, without obvious punctures. POL: OOL = 1: 0.9. Clypeus $1.6 \times$ as wide as long; anterior margin shallowly and widely emarginate; antero-lateral angles rounded.

Mesosoma and gaster microreticulate and punctured as in female. Setation of head, mesosoma and gaster as in female.

Tergum VII apico-medially with a V-shaped incision; sides of incision and margin of tergal lobes flanking incision distinctly lamellate. Posterior margin of sterna VII + VIII medially with a narrow, black, rectangular lamella; distal margin of lamella extending posteriorly as far as postero-lateral angles of sterna.

Etymology.—The name *codoni*, genitive singular, is formed from the generic name of the plant *Codon royenii* L. (Boraginaceae), in the flowers of which the wasp was found in large numbers at several localities.

Material examined.—Holotype: ♂, NAMIBIA: E of Oranjemund, 37 km from checkpoint on road to Sendelingsdrif (28.23S 16.44E), 24.ix.1997 (F. W. and S. K. Gess) (visiting white flowers of *Codon royenii* L., Boraginaceae) [AMG]. Paratypes: NAMIBIA: 10 km S of Rosh Pinah (28.02S 16.50E), 15.x.2000 (F. W. and S. K. Gess), 3 ♀♀ (visiting white flowers of *Codon royenii* L., Boraginaceae); E of Oranjemund, 37 km from checkpoint on road to Sendelingsdrif (28.23S 16.44E), 24.ix.1997 (F. W. and S. K. Gess), 59 ♀♀, 83 ♂♂ (48 ♀♀ and 83 ♂♂ visiting white flowers of *Codon royenii*; 11 ♀♀ visiting white flowers of *Mesembryanthemum* sp., Aizoaceae: *Mesembryanthema*)—[all AMG]. SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Koeroegabvlakte (28.11S 17.03E), 17–21 and 24.ix.1995 (F. W., S. K. and R. W. Gess), 4 ♀♀, 4 ♂♂ (1 ♀, 1 ♂ [*in copula*] visiting white flowers of *Codon royenii*; 2 ♀♀, 2 ♂♂ [one pair *in copula*] visiting pale white-pink flowers of *Prenia sladeniana* (L. Bol.) L. Bol., Aizoaceae: *Mesembryanthema*; 1 ♀, 1 ♂ in deep violet flowers of *Peliostomum leucorrhiza* E. Mey. ex

Benth., Scrophulariaceae); Richtersveld National Park, Paradise Kloof (28.19S 17.01E), 22.ix.1995 (F. W., S. K. and R. W. Gess), 1 ♀ (visiting pale white-pink flowers of *Prenia sladeniana*); Richtersveld: 24 km N of Annis River crossing by road to Sendelingsdrif (28.14S 16.55E), 21.ix.1997 (F. W. and S. K. Gess), 4 ♀♀, 2 ♂♂ (all visiting white flowers of *Codon royenii*)—[all AMG].

Geographic distribution.—Appears to be restricted to the winter rainfall area (Desert and Succulent Steppe of Giess, 1971) of south western Namibia and the adjacent Richtersveld of the Northern Cape of South Africa.

Floral associations.—Most commonly found in the flowers of *Codon royenii* L. (Boraginaceae, formerly in Hydrophyllaceae); less commonly visiting flowers of Aizoaceae: *Mesembryanthemum* (*Mesembryanthemum*, *Prenia*) and Scrophulariaceae (*Peliostomum*). Within the large, cup-shaped, flowers of *Codon royenii* these small wasps were frequently present in numbers, sunning themselves, mating, drinking nectar and collecting pollen.

Nesting.—Unknown.

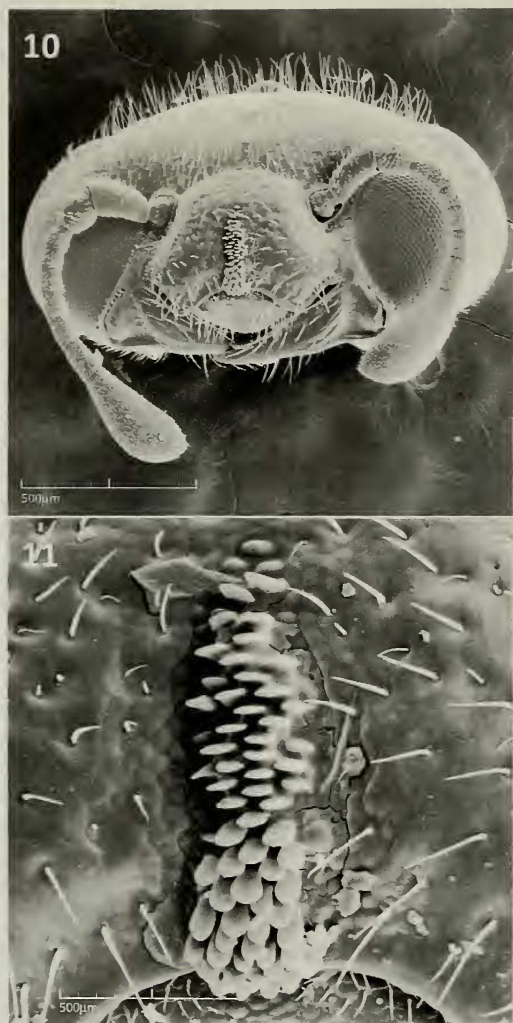
Discussion.—Reminiscent of *Q. laeta* von Schulthess but distinguishable from that species in both sexes by its larger size (4.2–5.0 mm as compared with 3.5–4.0 mm) and by the possession of an oblique pale streak on each side of vertex. In the male distinguishable also by the differently shaped posterior margin of sterna VII + VIII (medially with a narrow, black, rectangular lamella extending posteriorly as far as level of postero-lateral angles of sterna, as compared with considerably wider, black, rectangular lamella extending posteriorly short of the level of the postero-lateral angles of the sterna).

Quartinia diana (Richards)

(Figs 10, 11)

Quartinoides diana Richards, 1962: 178. Holotype: ♀, Namibia: Aus (BMNH).

Quartinia ?diana (Richards): Gess and Gess, 2003: 59 (flower visiting).



Figs 10, 11. *Quartinia diana*: 10, ♂, head, ventro-frontal view; 11, ♂, portion of clypeus showing median "brush" of modified setae.

Diagnosis.—Medium to large (4.4–4.6 mm). Fore wing with Cu1a and 2*m-cu* thin, very pale to transparent. Tegula with posterior inner corner almost rounded, yellowish brown. Both sexes with head, mesosoma and gaster brightly shiny; mesoscutum and scutellum very sparsely punctured. Head, dorsal aspect of pronotum, postero-lateral aspects of propodeum, and gaster with distinct, outstanding, fine, pale setae, longest and most dense on terga. Male with a unique vertical "brush" of short, stout, black, semi-porrect to

porrect setae on lower half of clypeus (see also description below) (Figs 10, 11).

Description.—*Male* (hitherto undescribed): Very similar in coloration and colour pattern to female, most noticeably differing in the following characters. Labrum, most of disk of clypeus pale yellow (except area below antennal insertion and along midline on lower half); the latter dark area narrowly and slightly depressed and, as seen under a binocular microscope, apparently closely set with a vertical "brush" of short, stout, black, semi-porrect to porrect setae; setae as seen with the aid of a scanning electron microscope much modified, flattened, widened and distally rounded (Figs 10, 11); "brush" at its lower end overhanging base of labrum. Terminal two flagellomeres black throughout, contrasting markedly with pale lower surface of preceding flagellomeres. Frons with a pair of brown spots above clypeo-frontal suture. Mesoscutum and scutellum in most specimens with fine setae as on other parts of the body. Tergum VII posteriorly with a short median slit. Parameres unusually robust.

Material examined.—NAMIBIA: Aus (Pad C 13) [26.40S 16.15E], 8.xii.1994 (M. Kuhlmann), 6 ♀♀ [5 ♀♀ Coll. M. Kuhlmann, London, 1 ♀ AMG]; SW Klein-Aus Vista (26.44S 16.10E), 24.ix.2003 (F. W. and S. K. Gess), 1 ♀ (visiting violet flowers of *Peliostomum leucorrhizum* E. Mey. ex Benth., Scrophulariaceae) [AMG]; E of Oranjemund, 37 km from checkpoint on road to Sendelingsdrif (28.23S 16.44E), 24.ix.1997 (F. W. and S. K. Gess), 2♀♀, 2 ♂♂ (1 ♀, 2 ♂♂ visiting white flowers of *Psilocaulon* sp., Aizoaceae: Mesembryanthema; 1 ♀ visiting white flowers of *Codon royeri* L., Boraginaceae) [AMG]; SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Koeroegabvlakte (28.11S 17.03E), 17–21 and 24.ix.1995 (F. W., S. K. and R. W. Gess), 10♀♀, 11 ♂♂ (7♀♀, 7 ♂♂ in deep violet flowers of *Peliostomum leucorrhizum*; 1 ♀ on pink flowers of *Drosanthemum* sp., Aizoaceae: Mesembryanthema; 1 ♀ on yellow flowers of Aizoaceae: Mesembryanthema; 1 ♂ on blue rayed *Felicia* sp., Asteraceae; 1 ♀ and 1 ♂, in copula on yellow flowers of *Gorteria* sp., Asteraceae; 2 ♂♂ without flower visiting data);

same locality, 6.ix.1996 (F. W., S. K. and R. W. Gess), 2 ♂♂ (on ground near flowering *Peliostomum* sp., Scrophulariaceae); Richtersveld National Park, Paradise Kloof (28.19S 17.01E), 22.ix.1995 (F. W., S. K. and R. W. Gess), 1 ♂ (on pink flowers of *Drosanthemum* sp.)—[all AMG].

Provenance of specimens examined by Richards (1962).—NAMIBIA: Aus (16 ♀♀).

Geographic distribution.—Appears to be restricted to the winter rainfall area (Desert and Succulent Steppe of Giess 1971) of south western Namibia and the adjacent Richtersveld of the Northern Cape of South Africa.

Floral associations.—Most commonly found in or near the flowers of *Peliostomum* (Scrophulariaceae), less commonly visiting the flowers of Aizoaceae: Mesembryanthema (*Drosanthemum*, *Psilocaulon* and an unidentified species), Asteraceae (*Felicia*, *Gorteria*) and Boraginaceae (*Codon*).

Nesting.—Unknown.

Discussion.—Richards (1962: 179) correctly states that “in its relatively long pubescence and brightly shining integument, this species is very distinct from other species of the genus”. Furthermore the male’s vertical “brush” of short, stout, black, porrect setae on the lower half of clypeus is unique and therefore diagnostic. Whereas the mesoscutum of the male has setae, only vestiges, mainly around the edges, are present on that of the female. Possibly denudation of the mesoscutal setae of the female results from her nesting activity.

Quartinia maculipennis Gess, new species
(Fig. 12)

Quartinia sp. nov. mac, Gess and Gess, 2003: 60
(flower visiting).

Diagnosis.—Small (2.8–3.1 mm long). Fore wing with Cu1a and 2m-cu thin but not appreciably more so than other veins. Tegula with posterior inner corner inwardly produced. Both sexes with anterior portion of wing tip (from distal third of marginal cell) distinctly infusate (Fig. 12).



Fig. 12. *Quartinia maculipennis*: ♀, ventro-lateral view ($\times 19$) showing macula on fore wing.

Male with tergum VII not terminally emarginate as is usual in the genus but triangular and somewhat hood-like, subcarinate in midline over distal half and ending apically in a pronounced, shiny, downcurved, nose-like projection.

Description.—*Female* (Fig. 12): Black. The following are yellowish-white: median section of mandible (to variable degree), underside of antenna (except last flagellomere); medially interrupted anterior margin of pronotum and postero-dorsal region of same; humeral marking; elongate mark anteriorly on mesopleuron; lateral spot on disk of scutellum and medially interrupted band on lamellate margin of same; tegula (with exception of median testaceous area); posterior bands (not reaching sides) on terga I–IV or V (V in some specimens testaceous); apex of femur, tibia (other than for variable amount of black at mid length), and tarsomeres I–IV of all legs.

Wings with venation brown; fore wing with 2m-cu not appreciably thinner than other veins; membrane almost hyaline but with anterior portion of wing tip (from distal third of marginal cell) distinctly infusate (Fig. 12).

Length 2.8–3.0 mm (average of 5: 2.9 mm); length of fore wing 1.9–2.0 mm; hamuli 4–5.

Head in front view $1.18 \times$ as wide as long; POL: OOL = 1: 1.1. Clypeus, frons,

thorax and gaster microreticulate; mesonotum with indistinct, small, shallow punctures. Head and thorax a little shiny, gaster more so. Tegula with posterior inner corner inwardly produced.

Male: Coloration and markings very similar to those of female, with additional yellowish-white markings as follow: labrum (if not testaceous); disk of clypeus; narrow transverse supraclypeal marking (not reaching antennal sockets) adjoining clypeo-frontal suture. Infuscation of fore wing tip as in female (Fig. 12).

Length 3.1 mm (2 specimens); length of fore wing 1.9 mm; hamuli 4–5.

Tergum VII not terminally emarginate as is usual in the genus but triangular and somewhat hood-like, subcarinate in midline over distal half and ending apically in a pronounced, shiny, downcurved, nose-like projection. Sternum II, posterior to groove, transversely swollen over almost entire width but especially so medially, anteriorly falling very steeply into groove and posteriorly somewhat less steeply to hind margin of segment.

Etymology.—The name serves to draw attention to the infuscate spot at the tip of the fore wing.

Material examined.—Holotype ♂, NAMIBIA: Gaub River bed in Gaub Pass (23.29S 15.46E), 14.iv.1988 (F. W. and S. K. Gess) (visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae) [AMG]. Paratypes: NAMIBIA: between Kuiseb and Gaub passes (23.27S 15.46E), 22.iii.1999 (F. W. and S. K. Gess), 1 ♀, 1 ♂ (visiting yellow flowers of *Zygophyllum simplex*; Gaub River bed in Gaub Pass (23.29S 15.46E), 14.iv.1988 (F. W. and S. K. Gess), 1 ♂ (visiting yellow flowers of *Zygophyllum simplex*); Gaub Pass (23.30S 15.46E), 19.iii.1997 (F. W. and S. K. Gess), 6 ♀♀ (visiting yellow flowers of *Zygophyllum simplex*)—[all AMG]; Namib National Park, Homeb [locality not traced], 23.i.1988 (R. Miller and L. Stange), 2 ♀♀, 1 ♂ [FSCA].

Geographic distribution.—Known only from Namibia, from the Central Namib and the Semi-desert and Savanna Transition of Giess (1971).



Fig. 13. *Quartinia mandibulata*: ♂, head, ventro-frontal view showing mandibles.

Floral associations.—Known only in association with *Zygophyllum simplex* L. (Zygophyllaceae).

Nesting.—Unknown.

Quartinia mandibulata Gess, new species (Fig. 13)

Quartinia sp. N3 (*partim*), Gess and Gess, 2003: 74 (flower visiting).

Diagnosis.—Small (3.2 mm). Fore wing with Cu1a and 2m-cu present but attenuate, much thinner than other veins, and with 2 m-cu interrupted before reaching M. Tegula with posterior inner corner inwardly produced. Male black with yellowish-white markings and with legs predominantly light yellow-ochre. Mandible in basal half markedly emarginate externally (Fig. 13); clypeal disk slightly depressed antero-medially; labrum carinate.

Description.—*Male:* Black. The following are yellowish-white: basal emargination of mandible (in all but one specimen); labrum; clypeus (other than below antennal socket); large mark (in some specimens bilobed dorsally) on frons immediately above clypeus; streak almost filling ocular sinus and extending down paraocular area

(leaving a narrow black streak above antennal socket); broad streak on temple behind upper part of eye carried down narrowly along hind margin of eye towards or to mandibular articulation and in some specimens crossing malar space to join bottom of inner paraocular streak; underside of scape, pedicel and flagellomeres I–VII and part of VIII (most obvious on VI and VII and contrasting markedly with black distal part of club); hind margin of pronotum; humeral spot; large, irregularly-shaped mark at top of mesopleuron; tegula other than for testaceous median area; transverse postero-medial spot on disk of scutellum and lamellate margin (medially interrupted) of same; propodeal angle; posterior bands on terga I–VI (not quite reaching sides and all but I more or less expanded medially and laterally). The following are yellow-ochre: mandible (other than yellowish-white basal part and reddish-brown tip; entire legs (other than in some specimens reddish-brown tarsomere 5). In the majority of specimens the ground colour of the mesosoma (but not the mesonotum and scutellum) and the gaster is dark brown rather than black. Wings subhyaline; veins brown.

Length 3.2 mm; length of fore wing 2.1 mm; hamuli 4.

Head in front view $1.22\text{--}1.28 \times$ as wide as long (average of three specimens: $1.26 \times$); finely microreticulate (shagreened), moderately shiny. POL: OOL = 1: 0.9. Clypeus $1.55\text{--}1.60 \times$ as wide as long (average of three specimens: $1.58 \times$), steeply raised laterally above paraocular areas and with disk slightly depressed antero-medially; dorsal margin rising to slightly exceeding level of an imaginary line joining top of antennal sockets; distal margin widely and shallowly emarginate, narrowly lamellate. Labrum with a well developed median carina. Mandible in basal half markedly but smoothly emarginate externo-laterally; in front view sinuate (Fig. 13).

Mesosoma microreticulate, moderately shiny, without obvious punctures.

Gaster microreticulate with very indistinct shallow punctures, moderately shiny. Tergum VII with a deep and narrow V-shaped emargination or incision; lobes flanking incision apically pointed but narrowly rounded, slightly upturned. Sterna VII + VIII with a very small, black protuberance.

Setation of head and mesothorax and gaster inconspicuous, fine, short; that on tergum I a little more obvious.

Female.—No females could with certainty be associated with the males here described.

Etymology.—The name serves to draw attention to the unusually formed mandible of the male.

Material examined.—Holotype ♂, NAMIBIA: Gaub Pass (23.30S 15.46E), 19.iii.1997 (F. W. and S. K. Gess) (visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae) [AMG]. Paratypes: NAMIBIA: Swakopmund Dist[ri]ct, Upper Panner Gorge (22.29S 15.01 E), 10.iv.–8.v.1984 (J. Irish and H. Liessner), 3 ♂♂ [NNIC]; Swakopmund Dist[ri]ct, Lower Ostrich Gorge (22.30S 14.58E), 11.iii.–9.iv.1985 (J. Irish and H. Rust), 1 ♂ [NNIC]; between Kuiseb and Gaub passes (23.27S 15.46E), 22.iii.1999 (F. W. and S. K. Gess), 1 ♂ (visiting yellow flowers of *Zygophyllum simplex*) [AMG].

Geographic distribution.—Known from Namibia from localities in the Central Namib of Giess (1971).

Floral associations.—*Zygophyllum simplex* L. (Zygophyllaceae).

Nesting.—Unknown.

Quartinia minima von Schulthess

Quartinia minima von Schulthess, 1932:528, ♀.

Holotype: ♀, Namibia: Aus (BMNH); Gess and Gess, 2003: 60 (flower visiting).

Quartinoides minima (von Schulthess) Richards, 1962: 179.

Diagnosis.—Minute to small (2.3–3.0 mm long). Fore wing with Cu1a and 2m-cu thin, very pale to transparent. Tegula with posterior inner corner inwardly produced,

yellow (except for pale testaceous discal spot. Clypeus produced circa $0.5-1 \times$ antennal socket diameter above level of an imaginary line joining upper margins of sockets. Both sexes with head and thorax black with moderate yellow markings; gaster predominantly yellow.

Male "face" with following pale: mandibles (other than base), labrum, clypeus to varying extent, streak in ocular sinuses (in some specimens extended ventrally onto paraocular area), pair of supraclypeal spots (in some specimens fused). Mandible not swollen at base. Labrum without any indication of a median carina, its distal margin evenly rounded. Antennal club elongate, length $> 2 \times$ width, end rounded.

Discussion and additional descriptions.—Described rather briefly by von Schulthess from a single female and redescribed in greater detail by Richards from the same specimen, this species is difficult to recognise from the literature due to several incorrect statements. Thus in Richards' key (p.171) and in his description (p.180) it is stated that the hind tibia has only one spur whereas the type actually has two: the long spur mentioned by Richards and in addition a very much shorter and thinner one. Richards (p.179) states that the head in front view is "about one quarter times longer than broad" whereas it is actually $1.21 \times$ as wide as long. Further, he states (p.172) that the clypeus at midline is "not much shorter than maximum breadth" and (p.179) "clypeus just transverse, extreme width one-quarter longer than central length" whereas it is actually $1.5 \times$ as wide as long.

Richards' statement that the dorsal margin of the clypeus in the centre is "well above level of antennal socket" is correct. Actually it is about one socket diameter above a line joining the dorsal margins of the antennal sockets, the head being positioned such that the vertex between the ocelli and the ventral margin of the clypeus are concurrently in focus.

A series of 77 ♀♀ and 19 ♂♂ from three localities along the seaboard of the Namib Desert are assignable to the species, the true proportions of the head and clypeus given above for the type of *minima* falling within the range established for the new material.

In order adequately to characterize the species, the following description, based on a sample of 65 ♀♀ and 19 ♂♂ from 110 km north of Swakopmund, deals in considerable detail with the colour pattern, the extent of the pale markings being variable within a population and, with regard to any individual specimen, marked development of pale markings on one body part not necessarily being accompanied by concomitant development of such on another. The recently collected specimens from the other listed localities fall within the same range of variation. All the specimens differ from the type from Aus in that the wide sinuate frontal band from one ocular sinus to the other is not developed.

Female.—Black. The following are yellowish-white: occasionally a small subbasal spot on mandible; markings on clypeus [rarely totally absent] consisting of antero-lateral spots, small antero-medial spot and occasionally a minute baso-medial spot, or of anterior margin and minute baso-medial spot, or of anterior margin and median streak connecting with baso-medial spot (to form a narrow anchor-like marking), or of wide anterior margin and upwardly widening median streak (to form a wide anchor-like marking and leaving only a pair of variably sized oblique black sub-antennal streaks on the otherwise pale clypeus); supraclypeal marking on frons [rarely totally absent] consisting of a pair of minute to small spots (if minute sometimes present on only one side), or of a pair of large well separated or closely approximated spots, or of a large trapezoidal patch (formed by the fusion of spots) incorporating a small black central spot; entire ocular sinus; occasionally an isolated spot or a

narrow streak (connecting with white of ocular sinus) in paraocular area flanking clypeus; post-ocular streak extending from behind top of eye or sometimes from near posterior ocellus to half way down gena; rarely a small spot at bottom of gena at mandibular insertion; rarely a small spot flanking inner margin of upper part of eye, or a band descending from postocular streak and approaching or connecting with white of ocular sinus; rarely two or more minute to small spots between and slightly posterior to hind ocelli; in one specimen a longitudinal streak on each side of anterior ocellus and extending dorsally between and slightly posterior to posterior ocelli; hind margin and humeral angle (to variable degree) or entire dorsal part of pronotum; markings on mesonotum consisting bi-laterally of postero-lateral streak adjoining tegula and often of small antero-lateral spot/spots/crescent and postero-medially of an anteriorly bipronged subrectangular patch, or of postero-lateral streak produced to incorporate antero-lateral spots and thence recurved and directed posteriorly towards but not meeting anteriorly bipronged subrectangular patch, or of broad lateral streak anteriorly produced, recurved and broadly and smoothly connecting with postero-medial patch; tegula (other than for small clear central area); scutellar disk (other than for antero-medial posteriorly bilobed black mark or occasionally only mesoscutal/scutellar suture); scutellar lamella; central part of metanotum; large mark on upper part of pleuron; dorsal area and lateral angles of propodeum (declivity more or less bracketed with white and with small white median spot) or almost entire propodeum; all terga; terminal sterna (basal sterna variably suffused with black); coxae occasionally in part; apices or occasionally most of femora; entire tibiae; tarsomeres 1–4 (tarsomeres 5 contrastingly dark).

Length 3 mm; length of fore wing 2 mm; hamuli 4. Tongue length circa 3 mm.

Head $1.18 \times$ as wide as long (average of 5; range 1.17–1.20). Clypeus $1.51 \times$ as wide as long (average of 5; range 1.48–1.53); clypeal dorsal margin variably produced, attaining a level ranging from just above a line joining the dorsal margins of the antennal sockets to about one socket diameter above such a line.

Male (hitherto undescribed).—Similarly coloured to the female but with the following differences: mandible (other than black base), labrum, and occasionally entire disk of clypeus yellowish-white; frons in one specimen with white of ocular sinus and of supraclypeal spot narrowly joined (unilaterally only); mesonotum with bilateral postero-lateral streak adjoining tegula and anteriorly bipronged subrectangular postero-medial marking only; declivity of tergum 1 always black; terga II–IV usually with black anterior transverse bands (best visible in a downwardly flexed gaster); terga I–VI often with a pair of widely separated, narrow, blackish, transverse markings in posterior half.

Length 2.3–2.7 mm (average of 7: 2.4 mm); length of fore wing 1.6–1.8 mm (average of 4: 1.7 mm); hamuli 4.

Head $1.26 \times$ as wide as long (average of 3; range 1.25–1.29).

Clypeus $1.54 \times$ as wide as long (average of 3; range 1.46–1.62); clypeal dorsal margin attaining a level slightly above a line joining the dorsal margins of the antennal sockets; distal margin moderately emarginate and moderately lamellate; disk distolaterally with short inconspicuous setae. Labrum without any indication of a median carina, inconspicuously and sparsely setose; distal margin evenly rounded.

Tergum VII with a shallow V-shaped apical incision, the lobes defining it rounded; apical margin of sterna VII + VIII with a wide black median projection; parameres flattened, wide, distally with outer margin smoothly rounded to apex and inner margin with an emargination producing a proximal tooth and an apical hook.

Material examined.—NAMIBIA: Aus, xii.1929 (R. E. Turner), Holotype ♀ (B.M.TYPE HYM. 18.49) [BMNH]; Ugab River, coastal road (21.06S 13.34E), 17.iii.1999, 1 ♀ (visiting yellow flowers of *Galenia papulosa* (Eckl. and Zeyh.) Sond., Aizoaceae: non-Mesembryanthema); 110 km NW of Swakopmund (21.50S 14.05E), 15.iii.1999, 65 ♀♀, 19 ♂♂ (61 ♀♀, 18 ♂♂ visiting yellow flowers of *Galenia papulosa*; 3 ♀♀, 1 ♂ visiting white flowers of *Brownanthus kuntzei* (Schinz) Ihlenf. and Bittrich, Aizoaceae: Mesembryanthema; 1 ♀ visiting yellow flowers of *Tripteris microcarpa* Harv., Asteraceae); 10 km N of Swakopmund at wireless mast (22.35S 14.32E), 21.iii.1997, 11 ♀♀ (visiting yellow flowers of *Galenia papulosa*); 97 km by road from Swakopmund to Usakos (22.10S 15.10E), 16.iii.2000, 2 ♀♀ (visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae)—all F. W. and S. K. Gess [AMG] (unless otherwise indicated).

Geographic distribution.—Known only from Namibia, from Aus in the Desert and Succulent Steppe of Giess (1971) and from the seaboard and interior of the Central Namib.

Floral associations.—Along the seaboard of the Central Namib very markedly associated with Aizoaceae: non-Mesembryanthema (*Galenia papulosa*); in a drainage line within the Central Namib found on Zygophyllaceae (*Zygophyllum simplex*).

Nesting.—Unknown.

Quartinia parva Gess, new species

Quartinia sp. N4, Gess and Gess, 2003: 74.

Diagnosis.—Minute to small (2.4–2.8 mm). Fore wing with *Cu*₁a and *2m-cu* present but attenuate, much thinner than other veins, and with *2m-cu* interrupted before reaching M. Tegula with posterior inner corner rounded and inwardly produced. Distinguished from other species by a combination of characters: its small size, tegular shape, and colour pattern.

Description.—*Female*: Black. The following are yellowish-white: most of under side of antenna; minute dot or very narrow streak (in small minority of specimens only) at bottom of ocular sinus; small

streak (effaced in some specimens) on temple behind upper part of eye; hind margin of pronotum (continuous to postero-dorsal angle or interrupted before reaching latter) and humeral angle of same; small streak at top of mesopleuron; anterior and posterior parts of tegula (median part testaceous); three spots on scutellar disk—a baso-lateral pair and a larger postero-medial one (in some specimens with baso-lateral pair effaced, in others with three spots narrowly fused); scutellar lamella laterally; propodeal angle; posterior bands (expanded medially and laterally and reaching sides) on terga I–V; apex of femur and base of tibia of all legs. Various shades of reddish-brown are: mandible; most of upper side of antenna; legs (other than for pale parts indicated above and darker tarsomere V) Wings subhyaline; veins brown.

Length 2.8 mm (average of 3); length of fore wing 1.9 mm (average of 3); hamuli 4.

Head in front view $1.38 \times$ as wide as long (average of 3), finely microreticulate (shadreened), moderately shiny; frons and vertex with very indistinct, shallow punctures; POL: OOL = 1: 0.9. Clypeus $1.7 \times$ as wide as long; anterior margin widely and shallowly emarginate.

Mesosoma microreticulate, moderately shiny, with scattered small punctures (more obvious than on head). Gaster moderately shiny.

Male: Black. The following are yellowish-white: labrum; clypeus; large sub-oval mark, encompassing a small black median spot, on lower part of frons contiguous with yellowish-white clypeus (in a few specimens mark is narrowly divided into two by a thin vertical black line passing through the median black spot); streak of variable shape and size in lower half of ocular sinus; small streak (effaced in some specimens) on temple behind upper part of eye; hind margin of pronotum (continuous to postero-dorsal angle or interrupted before reaching latter) and humeral angle of same; small streak at top of meso-

pleuron; anterior and posterior parts of tegula (median part testaceous); three spots on scutellar disk—a baso-lateral pair and a larger postero-medial one (in some specimens with baso-lateral pair effaced, in others with three spots narrowly fused); scutellar lamella laterally; propodeal angle; posterior bands (expanded medially and laterally and reaching sides) on terga I–VI; in some specimens a small median mark on tergum VII; apex of femur and base of tibia of all legs. Various shades of reddish-brown are: mandible; most of antenna (except most of club); leg (other than for pale parts indicated above and darker tarsomere V) Wings subhyaline; veins brown.

Length 2.4 mm (average of 3); length of fore wing 1.7 mm (average of 3).

Head in front view $1.34 \times$ as wide as long (average 3 specimens). POL: OOL = 1: 0.8. Clypeus $1.7 \times$ as wide as long (average of 3); dorsal margin attaining a level only slightly exceeding an imaginary line joining dorsal margins of antennal sockets.

Tergum VII with a shallow V-shaped emargination and with lobes flanking it widely rounded. Sterna atuberculate.

The above descriptions are based on the large sample taken of the population at the Swakop River and take cogniscence of variations within that population. The specimens from further inland (34 km SW of Usakos and between Kuiseb and Gaub passes) are generally more melanistic and exhibit, for example, a reduction or total absence of the pale spot on the humeral angle.

Etymology.—The name *parva*, a Latin female adjective meaning small, refers to the size of the species.

Material examined.—Holotype: ♂, NAMIBIA: Swakop River at bridge near mouth (22.42S 14.32E), 12.iv.1998 (F. W. and S. K. Gess) (visiting deep pink flowers of *Galenia papulosa* (Eckl. and Zeyh.) Sond., Aizoaceae: non-Mesembryanthema and yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae) [AMG]. Paratypes: NAMIBIA: 34 km SW of Usakos

(22.02S 15.17E), 22.iii.1997 (F. W. and S. K. Gess), 3 ♀♀, 1 ♂ (1 ♀ visiting yellow flowers of *Zygophyllum simplex*; 2 ♀♀, 1 ♂ visiting purplish pink flowers of *Sesuvium sesuvioides* (Fenzl) Verdc., Aizoaceae: non-Mesembryanthema); between Kuiseb and Gaub passes (23.24S 15.50E), 22.iii.1999 (F. W. and S. K. Gess), 3 ♀♀ (visiting white flowers of *Zygophyllum cylindrifolium* Schinz); between Kuiseb and Gaub passes (23.27S 15.46E), 22.iii.1999 (F.W. and S. K. Gess), 1 ♂ (visiting yellow flowers of *Zygophyllum simplex*); Swakop River at bridge near mouth (22.42S 14.32E), 12.iv.1998 (F. W. and S. K. Gess), 62 ♀♀, 11 ♂♂ (visiting deep pink flowers of *Galenia papulosa* and yellow flowers of *Zygophyllum simplex*)—[all AMG].

Geographic distribution.—Known from Namibia from localities in the Semi-desert and Savanna Transition (Escarpment Zone) and the Central Namib of Giess (1971).

Floral associations.—Aizoaceae: non-Mesembryanthema (*Galenia papulosa* and *Sesuvium sesuvioides*) and Zygophyllaceae (*Zygophyllum cylindrifolium* and *Z. simplex*).

Nesting.—Unknown.

Quartinia poecila von Schulthess

Quartinia poecila von Schulthess, 1930: 327, fig. 2, ♀, ♂. Lectotype: ♂ [B.M.TYPE HYM. 18.45b], Namibia: Swakopmund (BMNH); Gess and Gess, 2003: 61 (flower visiting).

Quartinioides poecila (von Schulthess): Richards, 1962: 180; Gess and Gess, 1989: 128; Gess, S. K., 1996: Appendices 1 and 2 (flower visiting).

Quartinioides sp. H: Gess and Gess, 1989: 130; Gess, S. K., 1996: Appendices 1 and 2 (flower visiting).

Diagnosis.—Small to medium sized (2.7–4.0 mm long). Fore wing with Cu1a and 2m-cu thin, very pale to transparent. Tegula with posterior inner corner markedly angular and somewhat inwardly produced, white (except for pale testaceous discal spot). Clypeus produced circa $0.5\text{--}1 \times$ antennal socket diameter above level of an imaginary line joining upper margins of sockets. Head, thorax and gaster black with white or yellow markings; pale markings

often separated from black by pale reddish. Male with pale "face" comprising mandibles, labrum, clypeus, paraocular areas and frons (upper margin of pale area varying from level of top of ocular sinuses to less than an ocellar width below median ocellus). Mandible somewhat swollen at base. Labrum moderately to markedly carinate, pyriform, its distal margin pointed. Antennal club short, length $2 \times$ width, end rounded.

Discussion and additional descriptions.—The redescription by Richards of Schulthess's type material collected by Turner at Swakopmund adequately characterizes material from that locality, specimens of both sexes recently collected there closely matching the types and the description. However, in dealing with the female, Richards fails to mention the lateral streak (flanking the tegula) on the mesonotum, a marking listed by Schulthess and characteristic of the material (of both sexes) from Swakopmund, Lüderitz and the Sperrgebiet.

Material from localities other than the type locality shows that the species is subject to considerable variation in appearance, expressed principally in an increase in the extent of the pale markings in specimens from Lüderitz and particularly from inland in the Sperrgebiet and a reduction of the pale markings in specimens from the southern part of the distributional range.

Thus in females from Lüderitz the basal third of the clypeus is white as is a pair of antero-lateral spots; on the frons there is an upward extension along the inner orbits of the pale markings in the ocular sinuses. Females from inland in the Sperrgebiet in addition have the black areas on the dorsal aspect of the pronotum (as seen in the Swakopmund specimens) reduced to light reddish. Males from inland in the Sperrgebiet show more striking differences: the clypeus and the pale area on the frons are yellow rather than white as in males from the coast, both north and south, and the

streak on the gena consistently extends down to the mandibular articulation rather than being limited to behind the eye dorsally. As in the females, the dorsal aspect of the pronotum is yellow and light reddish and there is a tendency for the better development of light markings on the mesopleuron and mesoscutum.

In females from the coast south of the mouth of the Orange River the clypeus is usually unmarked but some specimens from between Alexander Bay and Port Nolloth have a reduced transverse basal marking and two specimens from Hondeklip Bay have a median subbasal white spot and a pair of small antero-lateral white spots respectively. The white area in the ocular sinus is somewhat smaller; the two spots on the frons though usually present may be reduced or rarely even absent; the streak behind the eye is shorter and narrower; the humeral spot is smaller and the white posterior margin of the pronotum is medially and mid-laterally interrupted; the mesoscutal markings are totally effaced; the white of the scutellar disk is progressively reduced, being represented by fused postero-medial and antero-lateral spots, by separate subtriangular or rounded postero-medial and antero-lateral spots, or by a single postero-medial spot; the white of the central area of the metanotum is effaced; the spot on the dorsal half of the prepectus and the streaks dorsally on the propodeum are moderately to greatly reduced; the preapical bands on the terga are narrower (though widened medially and laterally on II–IV or II–III) and interrupted on V or IV; the white of VI is reduced to a pair of spots, or the white of V and VI is totally effaced. The reddish suffusion margining most of the white marks as in specimens from Swakopmund and Lüderitz is very much reduced or totally absent in specimens from further south.

Males show a similar progressive north to south reduction in the pale markings, some specimens from Hondeklip Bay

having not only the mesoscutum but also the scutellum and propodeum entirely black and the transverse posterior bands other than on tergum I barely represented. In all specimens, however, the white mandibles and the characteristic "face" comprising the white labrum, clypeus, paraocular areas and frons is preserved though in southern specimens the upper margin of the "face" does not extend above the level of the top of the ocular sinus.

Morphologically both sexes, but particularly the males, show some variation in the ratio of head width: length, the ratio of clypeus width: length, and the distance that the base of the clypeus rises upwards above the level of the antennal sockets. In comparison with males from the coast (Swakopmund and north of Port Nolloth), males from inland in the Sperrgebiet generally have a relatively wider head and clypeus, a clypeus that rises a shorter distance above the antennal sockets, and a less pronounced carina on the labrum. However, in view of the absence of corroborative characters in the females, and the variation of the relative proportions of head and clypeus (cutting across those mentioned above) present in the males of the Hondeklip Bay population, the possibility that the Sperrgebiet population might be specifically distinct cannot be upheld.

A small series of females from south east of Keetmanshoop in Namibia, determined by J. M. Carpenter as *Q. poecila* and examined by myself, appears to be yet another manifestation of this protean species. Like those from the coast south of the mouth of the Orange River the specimens are melanistic when compared with those from the type locality, but within the sample show some variation. All the specimens have the head and mesosoma black with yellowish-white markings and lack any reddish replacement of the black. The frons (except in one specimen in which immaculate), ocular sinus, gena, pronotum, tegula, mesopleuron, scutellar lamel-

la, and propodeal angle are similarly marked to the type, however, the clypeus may or may not have a large dorso-medial spot. Mesoscutal markings are absent except, in most specimens, for a postero-medial spot of varying size. The scutellum may have the typical marking reduced to three separate spots.

Material examined.—NAMIBIA: Swakopmund, 2–4.iv.1928 (R. E. Turner), Lectotype ♂ (B.M.TYPE HYM. 18.45b), Paratype ♀ (B.M.TYPE HYM. 18.45a) [BMNH]; Swakop R(iver), S side of mouth (22.42S 14.32E), 20.iii.1997, 1 ♀, 1 ♂ (both visiting white flowers of *Zygophyllum stapffii* Schinz, Zygophyllaceae); same locality, 12.iv.1998, 2 ♀♀ (both visiting deep pink flowers of *Galenia papulosa* (Eckl. and Zeyh.) Sond., Aizoaceae: non-Mesembryanthema and yellow flowers of *Zygophyllum simplex* L.); Lüderitzbucht, near Agate Beach (26.37S 15.11E), 29.ii.2000, 2 ♀♀ (visiting white flowers of *Zygophyllum clavatum* Schltr. and Diels.); Lüderitzbucht, near Diaz Point (26.39S 15.05E), 1.iii.2000, 3 ♀♀ (visiting pink flowers of *Brownanthus* sp., Aizoaceae: Mesembryanthema); Lüderitz Küste [circa 26.40S, 15.19E], 7.xii.1994 (M. Kuhlmann), 1 ♀ [Coll. M. Kuhlmann, London]; 30 mi[les] S. E. Keetmanshoop [circa 26.51S 18.34E], 23.x.1968 (J. G. Rozen and E. Martinez), 10 ♀♀ [AMNH]; Sperrgebiet, Tsabiams (27.10S 15.39E), 12.ix.2005 (F. W. and S. K. Gess), 26 ♀♀, 2 ♂♂ (1 ♀ visiting pink flowers of *Sarcocaulon patersonii* (DC.) G. Don., Geraniaceae); 25 ♀♀, 2 ♂♂ attracted to white insect net; Sperrgebiet, Klinghardtberge, Tsabiams Camp (27.10S 15.42E), 4.ix.2002, 5 ♀♀, 2 ♂♂ (5 ♀♀, 1 ♂ visiting yellow flowers of *Dimorphotheca polyptera* DC., Asteraceae; 1 ♂ visiting yellow flowers of *Grielum sinuatum* Licht. ex Burch., Neuradaceae); Sperrgebiet, Klinghardtberge, SE of Tsabiams (27.10S 15.42E), 20.ix.2003, 16 ♀♀, 27 ♂♂ (visiting yellow flowers of *Grielum sinuatum*); Sperrgebiet, Klinghardtberge, SE of Tsabiams (27.11S 15.42E) 20.ix.2003, 1 ♂ (visiting yellow flowers of *Grielum sinuatum*); Sperrgebiet, Klinghardtberge (27.14S 15.43E), 1.ix.2002, 3 ♀♀ (visiting yellow flowers of *Pteronia pomonae* Merxm., Asteraceae); Sperrgebiet, Klinghardtberge (27.14S 15.44E), 2.ix.2002, 4 ♀♀, 1 ♂ (3 ♀♀, 1 ♂ visiting apricot coloured flowers of *Phyllobolus oculatus* (N. E. Br.) Gerbaulet, Aizoaceae: Mesembryanthema; 1 ♀ visiting yellow flowers of

Pteronia pomonae); Sperrgebiet, Klinghardtberge (27.16S 15.45E), 3.ix.2002, 1 ♀ (visiting yellow flowers of *Tripteris crassifolia* O. Hoffm., Asteraceae); Sperrgebiet, Klinghardtberge (27.16S 15.46E), 1.ix.2002, 1 ♀ (visiting yellow flowers of *Phyllobolus oculatus*); Sperrgebiet, Klinghardtberge (27.19S 15.46E), 11.ix.2005 (F. W. and S. K. Gess). 35 ♀♀, (14 ♀♀ visiting pink flowers of *Hermannia gariepina* Eckl. and Zeyh., Malvaceae (Sterculioideae)); 2 ♀♀ visiting yellow flowers of *Hermannia macra* Schltr.; 19 ♀♀ attracted to Man); Sperrgebiet, NW of Heioab (27.23S 15.56E), 19.ix.2003, 1♀, 5 ♂♂ (visiting yellow flowers of *Grielum sinuatum*); Sperrgebiet, Klinghardtberge, Nomitsas (27.27S 15.52E), 31.viii.2002, 23 ♀♀, 28 ♂♂ (20 ♀♀, 28 ♂♂ visiting yellow flowers of *Grielum sinuatum*; 3 ♀♀ visiting yellow flowers of *Oncosiphon grandiflorum* (Thunb.) Källersjö., Asteraceae); Sperrgebiet, Uguchab River, NW of Aurus Mountains (27.31S 16.12E), 17.ix.2003, 8 ♂♂ (visiting yellow flowers of *Grielum sinuatum*); Aus to Rosh Pinah (27.44S 16.43E), 25.ix.2003, 1 ♂ (visiting yellow flowers of *Grielum sinuatum*); Sperrgebiet, Chamnaub (27.45S 16.05E), 28.viii.2002, 2 ♂♂ (visiting yellow flowers of *Oncosiphon grandiflorum*).

SOUTH AFRICA: NORTHERN CAPE: 60 km N of Port Nolloth (28.47S 16.38E), 27.ix.1997, 7 ♀♀, 1 ♂ (4 ♀♀ visiting pale pink flowers of *Drosanthemum* sp., Aizoaceae: Mesembryanthema; 3 ♀♀, ♂ on ground); 24 km S of Alexander Bay (28.47S 16.38E), 11.x.2000, 2 ♀♀ (visiting pink flowers of *Drosanthemum* sp.); 28 km S of Alexander Bay (28.49S 16.39E), 11.x.2000, 2 ♀♀, 2 ♂♂ (visiting yellow flowers of Asteraceae); Port Nolloth (29.12S 16 55E), 27.ix.1997, 6 ♀♀ (visiting cream/yellow flowers of *Carpobrotus edulis* (L.) Bol., Aizoaceae: Mesembryanthema); Port Nolloth, McDougall's Bay (29.17S 16.53E), 2.x.1985, 15 ♀♀ (visiting flowers of *Drosanthemum* sp.); same locality, 11.x.1988, 2 ♀♀ (visiting flowers of *Drosanthemum* sp.); Hondeklip Bay (30.19S 17.17E), 12.x.1994, 65 ♀♀, 16 ♂♂ (visiting yellow flowers of *Herrea* sp., Aizoaceae: Mesembryanthema); 7 km WNW of Wallekraal on road to Hondeklip Bay [30.21S 17.26E], 14–16.ix.1992, 1 ♀ (visiting white flowers of *Polycarena* cf. *collina* Hiern, Scrophulariaceae)–(all F. W. and S. K. Gess) [all AMG unless otherwise indicated]; Koingnaas Mines (30. 10S 17.14E), 12–17.ix.2007, 8 ♀♀, 12–17.xi.2007, 26 ♀♀, 2 ♂♂; ditto (30.10S 17.15E), 8–14.vii.2007, 2 ♀♀, 12–17.ix.2007, 39 ♀♀, 17 ♂♂;

ditto (30.12S 17.15E), 12–17.ix.2007, 3 ♀♀; ditto (30.14S 17.15E), 12–17.xi.2007, 1 ♀; ditto (30.16S 17.17E), 12–17.xi.2007, 2 ♀♀; ditto (30.18S 17.18E), 8–14.vii.2007, 2 ♀♀, 12–17.ix.2007, 16 ♀♀, 12–17.xi.2007, 2 ♀♀; ditto (30.21S 17.18E), 8–14.vii.2007, 1 ♀, 12–17.xi.2007, 3♀, 1 ♂; ditto (30.21S 17.20E), 8–14.vii.2007, 1 ♀, ix.2007, 13 ♀♀, 1 ♂, 12–17.xi.2007, 11 ♀♀, 1 ♂; ditto (30.22S 17.19E), 12–17.ix.2007, 14 ♀♀, 1 ♂, 12–17.xi.2007, 4♀; ditto (30.22S 17.20E), 8–14.vii.2007, 15 ♀♀, 1 ♂, 12–17.ix.2008, 7 ♀♀, 12–17.xi.2007, 11 ♀, 1 ♂; ditto (30.26S 17.21E), 12–16.ix.2007, 34 ♀♀, 5 ♂♂.–(all from pan traps.) (all C. Lyons *et al.*) [all AMG].

WESTERN CAPE: near Brand-se-Baai (31.22S 17.55E), 21–25.ix.2007, 2 ♀♀, 18–22.xi.2007, 4 ♀♀; ditto (31.23S 17.56E), 14–18.vii.2007, 2 ♀♀, 21–25.ix.2007, 14 ♀♀, 2 ♂♂, 17–22.xi.2007, 398 ♀♀, 48 ♂♂; ditto (31.25S 17.58E), 21–25.ix.2007, 10 ♀♀, 1 ♂, 17–22.xi.2007, 2 ♀♀; ditto (31.27S 18.00E), 21–25.ix.2007, 3 ♀♀, 17–22 .xi.2007, 16 ♀♀; ditto (31.29S 18.01E), 21–25.ix.2007, 4♀, 17–22.xi.2007, 11 ♀♀.–(all from pan traps.) (all C. Lyons *et al.*) [all AMG].

Geographic distribution.—Known in Namibia from the immediate vicinity of Swakopmund at the interface of the Central Namib and Southern Namib of Giess (1971), and from Lüderitzbucht, numerous localities inland in the Sperrgebiet (Diamond Area No 1) and from between Aus and Rosh Pinah, all in the Desert and Succulent Steppe. Undoubtedly occurs also in the under collected coastal areas of the Namib Naukluft Park (mostly Southern Namib) between Swakopmund and Lüderitz. Further inland (east) has also been collected south east of Keetmanshoop in the Dwarf Shrub Savanna. Known in South Africa from the Richtersveld coast between Alexander Bay and Port Nolloth, from Port Nolloth itself, and from the Namaqualand sandveld at Hondeklip Bay and at various sites north, south and east of that locality in what may be considered a southward extension of the Namib.

Floral associations.—Associated with Aizoaceae: both non-Mesembryanthema (*Galenia*) and Mesembryanthema (*Brownanthus*, *Carpobrotus*, *Drosanthemum*, *Herrea* and *Phyllobolus*), with Asteraceae (*Dimor-*

phothea, *Oncosiphon*, *Pteronia* and *Tripteris*), with Geraniaceae (*Sarcocaulon*), with Malvaceae (*Hermannia*); with Neuradaceae (*Grielum*), and with Zygophyllaceae (*Zygophyllum*), the few records of visits to the flowers of other plant families probably being incidental and of no account.

Nesting.—*Q. poecila* was observed at McDougall's Bay to nest in friable coastal dune sand.

Quartinia propinqua von Schulthess

Quartinia propinqua von Schulthess, 1932: 526, figs 2, 3, 4, female, male. Lectotype: female, Namibia: Aus (BMNH); Gess and Gess, 2003: 62 (flower visiting).

Quartinoides propinqua (von Schulthess): Richards, 1962: 199; Gess and Gess, 1989: 1; Gess, S. K., 1996: Appendices 1 and 2 (flower visiting).

Quartinoides sp. G: Gess and Gess, 1989: 128; Gess, S. K., 1996: Appendices 1 and 2 (flower visiting).

Diagnosis.—Small to medium sized (present material 2.9–4.0 mm long; 3.8–4.5 mm long according to Richards). Fore wing with Cu1a and 2*m-cu* thin, very pale to transparent. Tegula with posterior inner corner absolutely rounded, white (except for pale testaceous discal spot). Head, thorax and gaster black with white markings. Female usually with mark proximally on clypeus and marking on frons limited to spot in ocular sinus; male with medially carinate labrum and most of clypeus white and marking on frons in addition to spot in ocular sinus consisting of a ventro-medial quadrate area bearing a brown spot. Scutellum always with posterior one-third to two-thirds of disk and lamellate margin white. Last tarsomere brown. Mesoscutum a little shiny, finely reticulate with small shallow punctures. Antenna of male with club very slightly hooked.

The species has been adequately described by Richards (1962).

Material examined.—NAMIBIA: W of Kamanjab, on track from Erweë to Palmfontein (19.40S

14.17E), 18.iii.2004, 4 ♀♀, 2 ♂♂ (on white flowers of *Emilia marlothiana* (O. Hoffm.) C. Jeffrey, Asteraceae); W of Kamanjab, approaching foot of Grootberg Pass (19.47S 14.17E), 18.iii.2004, 7 ♀♀, 3 ♂♂ (7 ♀♀, 1 ♂ (on white flowers of *Emilia marlothiana*; 2 ♂♂ on flowers of *Felicia anthemidodes* (Hiern) Mendonca, Asteraceae); 110 km N[N]W of Swakopmund (21.50S 14.05E), 15.iii.1999, 1 ♀ (visiting yellow flowers of *Tripteris microcarpa* Harv., Asteraceae); 10 km west of Usakos (21.59S 15.29E), 24.iv.2002, 2 ♀♀ (visiting yellow flowers of small daisy, Asteraceae); 117 km by road from Swakopmund to Usakos (22.02S 15.17E), 16.iii.2000, 1 ♀ (visiting pink flowers of *Sesuvium sesuvioides* (Fenzl) Verdc., Aizoaceae: non-Mesembryanthema); 74 km by road from Swakopmund to Usakos (22.19S 15.06E), 15.iii.2000, 26 ♀♀, 9 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); 33 km by road from Swakopmund to Usakos, near Rössing Mountain (22.34S 14.49E), 15.iii.2000, 28 ♀♀ (visiting yellow flowers of *Tripteris microcarpa*), 1 ♂ (visiting white flowers of *Galenia africana* L., Aizoaceae: non-Mesembryanthema); same locality, 15.iv.2002, 2 ♀♀, 2 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); same locality, 28.iv.2002, 11 ♀♀, 6 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); same locality, 31.iii.2004, 51 ♀♀, 6 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); 22 km east of Swakopmund on road to Usakos (22.36S 14.42E), 15.iv.2002, 8 ♀♀, 1 ♂ (visiting yellow flowers of *Tripteris microcarpa*); 16.5 km by road from Swakopmund to Usakos (22.37S 14.40E), 14.iii.2000, 13 ♀♀, 2 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); plains south of Goanikontes (22.42S 14.47E), 16.iv.2002, 1 ♀, 2 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); Solitaire (23.52S 16.00E), 30.iv.2002, 3 ♀♀, 1 ♂ (visiting yellow flowers of *Hirpicium* sp., Asteraceae); NW of Aus, drainage channel (26.37S 16.12E), 17.ix.2005, 1 ♀ (visiting yellow flowers of *Leysera*, Asteraceae); NW of Aus (26.37S 16.15E), 17.ix.2005, 1 ♂ (visiting yellow flowers of small daisy heads, Asteraceae); Tirasberg Road, 7.5 km N of turnoff from road to Aus (26.37S 16.21E), 20.ix.2005, 18 ♀♀, 2 ♂♂ (visiting yellow flowers of *Berkheya schinzii* O. Hoffm., Asteraceae); Plateau 38, Lüderitz (SE 2616 Cb), 4–5.iii.1972 (H7179) (no collector), 2 ♀♀ [NNIC]; 9 km west of Aus (26.39S 16.10E), 7.ix.2002, 19 ♀♀, 20 ♂♂ (visiting yellow flowers of *Berkheya schinzii*); Klein-Aus Vista (26.39S 16.15E), 2.iii.2000, 9 ♀♀, 5 ♂♂ (7 ♀♀, 4 ♂♂ visiting

yellow flowers of *Berkheya schinzii*; 2 ♀♀, 1 ♂ visiting yellow flowers of *Hirpicium echinus* Less., Asteraceae; Klein-Aus Vista (26.41S 16.13E), 23.ix.2003, 4 ♀♀, 3 ♂♂ (4 ♀♀, 2 ♂♂ (visiting yellow flowers of Asteraceae; 1 ♂ visiting yellow flowers of *Berkheya schinzii*); Aus (26.40S 16.15E), 2 and 3.iii.2000, 63 ♀♀, 30 ♂♂ (61 ♀♀, 29 ♂♂ visiting yellow flowers of *Berkheya schinzii*; 1 ♀, 1 ♂ visiting yellow flowers of *Dimorphotheca polyptera* DC., Asteraceae; 1 ♀ visiting white flowers of sp. of Aizoaceae: *Mesembryanthema*); Aus (26.40S 16.15E), 27.iv.1988 (C. D. Eardley), 32 ♀♀, 12 ♂♂ [NCP]; Sperrgebiet, Tsaukhaib (26.43S 15.40E), 13.ix.2005, 30 ♀♀, 7 ♂♂ (visiting yellow flowers of *Berkheya schinzii*); same locality, 14.ix.2005, 1 ♀ (visiting yellow flowers of *Tripteris sinuata* DC., Asteraceae); Sperrgebiet, E of Tsaukhaib (26.43S 15.42E), 13.ix.2005, 3 ♀♀ (visiting yellow flowers of *Berkheya schinzii*); Aus to Rosh Pinah (26.50S 16.18E), 11.ix.2003, 6 ♀♀, 4 ♂♂ (visiting yellow flowers of *Berkheya schinzii*); Namaskluft (27.52S 16.52E), 26.ix.2003, 1 ♂ (visiting yellow flowers of *Othonna* sp., Asteraceae); Namaskluft/Rosh Pinah (27.58S 16.46E), 12.ix.2003, 15 ♀♀ (visiting yellow flowers of *Tripteris microcarpa*); S of Rosh Pinah (27.58S 16.47E), 12.ix.2003, 11 ♀♀ (visiting yellow flowers of *Tripteris microcarpa*); 16 km S of Rosh Pinah (28.04S 16.51E), 13.x.2000, 58 ♀♀, 4 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*; same locality, 15.x.2000, 1 ♀; same locality, 12.ix.2003, 21 ♀♀, 5 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*); Karas Mountains, 6 km S on 201 from 26 (27.09S 19.01E), 7.iii.1999, 1 ♀ (visiting yellow flowers of *Vahlia capensis* (L.f.) Thunb., Vahliaceae); same locality, 5.iii.2000, 1 ♀ (visiting yellow flowers of *Geigeria ornativa* O. Hoffm., Asteraceae)—all F. W. and S. K. Gess [AMG] (unless otherwise indicated). SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park, Pootjiespram (28.05S 16.57E), 16.ix.1995 (F. W., S. K. and R. W. Gess), 3 ♀♀, 12 ♂♂ (1 ♀, 9 ♂♂ visiting yellow-rayed *Osteospermum* sp., Asteraceae; 1 ♂ visiting yellow flowers of *Cleome paxii* (Schinz) Gilg & Ben., Brassicaceae [formerly Capparaceae]; 2 ♂♂ visiting yellow flowers of *Didelta carnosa* (L. f.) Ait., Asteraceae; 2 ♀♀ visiting yellow flowers of *Grielum grandiflorum* (L.) Druce, Rosaceae); Richtersveld National Park, Koeroegabvlakte (28.11S 17.03E), 20.ix.1995 (F. W., S. K. and R. W. Gess), 1 ♀, 1 ♂ (on yellow flowers of *Osteospermum* sp.); Bushmanland, 24 km ENE

of Aggeneys (29.08S 19.06E), 14.x.1988, 7 ♀♀ (on yellow daisy, Asteraceae); 22 km E of Williston on road to Carnarvon (31.16S 21.07E), 1.x.1989 (D. W. Gess), 1 ♀ (visiting flowers of *Gazania* sp., Asteraceae); 15 km N of Nieuwoudtville on road to Loeriesfontein (31.16S 19.08E), 7.x.1989, 1 ♀ (visiting flowers of *Senecio nivea* Less., Asteraceae); Nieuwoudtville Falls, 5 km N of Nieuwoudtville (31.19S 19.07E), 28.ix.1990, 1 ♀ (on yellow flowers of *Leysera gnaphaloides* (L.) L., Asteraceae); WESTERN CAPE: Prince Albert Dist., Tierberg (Study Site) (33.10S 22.16E), 5.xii.1987 (F. W., S. K. and R. W. Gess), 1 ♀ (on flowers of *Berkheya spinosa* (L.f.) Druce, Asteraceae); Molteno Pass nr. Beaufort West (32.12S 22.33E), 14.xii.1988 (C. D. Eardley), 2 ♀♀ [NCP]; Merweville (32.40S 21.30E), 15.xii.1988 (C. D. Eardley), 4 ♀♀ [NCP]—all F. W. and S. K. Gess [AMG] (unless otherwise indicated).

Geographic distribution.—Known in Namibia from the south-western part of the Mopane Savanna, the western part of the Semi-desert and Savanna Transition (Escarpment Zone), the Central Namib, and the eastern part of the Desert and Succulent Steppe of Giess (1971), and in South Africa from the Succulent Karoo and the western Nama Karoo.

Floral associations.—Very strongly associated with Asteraceae (*Berkheya*, *Didelta*, *Dimorphotheca*, *Emilia*, *Felicia*, *Gazania*, *Geigeria*, *Hirpicium*, *Leysera*, *Osteospermum*, *Othonna*, *Senecio*, and *Tripteris*), the few records of visits to the flowers of other plant families probably being incidental and of no account. In Namibia it is an expected visitor to *Tripteris microcarpa* wherever this plant occurs within its area of distribution and follows this plant along drainage channels across the Central Namib westwards to the coast.

Nesting.—Unknown.

Quartinia pteroniae Gess, new species

Diagnosis.—Small (2.5–2.7 mm long). Fore wing with Cula and 2*m-cu* thin, very pale to transparent. Tegula absolutely and evenly rounded posteriorly. Head, thorax and gaster black, shiny, with noticeable yellowish-white scutellar lamel-

lae, propodeal angles and posterior band on tergum I.

Description.—*Female*: Black. The following are light colored, ranging from yellowish-white (most markings on head and body) to reddish yellow (on antennae, legs and tegulae): mandible distally; underside of antenna; small spot at bottom of ocular sinus, small spot on gena behind top of eye, in a few specimens a minute spot on humeral angle and in some irregular and bilaterally asymmetrical narrow markings medially flanking hind margin of pronotum; in all specimens postero-dorsal angle of same; small spot at top of mesopleuron; tegula anteriorly and posteriorly (median part mid to dark testaceous); small spot postero-medially on scutellar disk; scutellar lamella (other than medially); propodeal angles; in all specimens an uninterrupted posterior band not reaching lateral margins on tergum I; in some specimens indications of posterior bands on one or more succeeding terga and in exceptional specimens with definite posterior bands on terga II–V; apex of femur, most of tibia and tarsomeres I–IV (becoming progressively darker) of all legs. Upper side of antennae reddish brown. Wings lightly darkened; veins brown.

Length 2.7 mm (average of 3); length of fore wing 1.8 mm (average of 3); hamuli 4.

Head in front view $1.23 \times$ as wide as long (average of 3; range 1.22–1.25), microsculptured (shagreened), moderately shiny, with sparse, very shallow punctures. POL: OOL = 1: 0.78. Clypeus $1.6 \times$ as wide as long; anterior margin shallowly emarginate; antero-lateral angles rounded.

Mesosoma microsculptured, moderately shiny, with punctures slightly larger and more noticeable than on head.

Gaster very finely microsculptured, shiny, with sparse, very small punctures.

Male. Black. The following are yellowish-white: mandible. underside of antenna; labrum, clypeus, transversely oval marking on lower half of frons (contiguous with white clypeus and centrally including a

small dark brown spot); bottom of ocular sinus; streak on gena behind top of eye; uninterrupted narrow band flanking hind margin of pronotum and reaching postero-dorsal angle of same; large oval marking on humeral angle; large marking at top of mesopleuron; tegula anteriorly and posteriorly (median part mid testaceous); transverse marking postero-medially on scutellar disk; scutellar lamella (other than medially); propodeal angles; uninterrupted narrow posterior bands (slightly expanded medially and laterally) not reaching lateral margins of terga I–VI; apex of femur and most of tibia of all legs; first four tarsomeres of fore leg. Last tarsomere of fore leg and all tarsomeres of middle and hind legs brown. Upper side of antennae reddish brown. Wings lightly darkened; veins brown.

Length 2.5 mm.

Head in front view $1.34 \times$ as wide as long. Clypeus $1.6 \times$ as wide as long (measured to the bottom of the emargination); anterior margin widely and shallowly emarginate; antero-lateral angles rounded.

Tergum VII slightly depressed posteriorly, narrowly and shallowly emarginate apically.

Sculpture and puncturation as in female.

Etymology.—The name *pteroniae*, genitive singular, is formed from the generic name of the plant *Pteronia pomonae* Merxm. (Asteraceae), on the capitula of which the wasp was most commonly found foraging for nectar or nectar and pollen.

Material examined.—Holotype ♀, NAMIBIA: Sperrgebiet, Klinghardtberge (27.14S 15.44E), 2.ix.2002 (F. W. and S. K. Gess) (visiting yellow flowers of *Pteronia pomonae* Merxm., Asteraceae) [AMG]. Paratypes: NAMIBIA: Sperrgebiet, Klinghardtberge (27.14S 15.43E), 1.ix.2002 (F. W. and S. K. Gess), 2 ♀♀ (visiting yellow flowers of *Pteronia pomonae*) [AMG]; Sperrgebiet, Klinghardtberge (27.14S 15.44E), 2.ix.2002 (F. W. and S. K. Gess), 28 ♀♀, 2 ♂♂ (28 ♀♀, 1 ♂ visiting yellow flowers of *Pteronia pomonae*; 1 ♂ visiting flowers of *Rehmania* sp., Asteraceae)



Fig. 14. *Quartzinia pulawskii*, ♂, fore leg.

[AMG]; Sperrgebiet, Klinghardtberge (27.16S 15.45E), 3.ix.2002 (F. W. and S. K. Gess), 68 ♀♀ (all visiting yellow flowers of *Pteronia pomonae*) [AMG].

Geographic distribution.—Known from Namibia, from two localities in the west of the Desert and Succulent Steppe (Winter rainfall area) of Giess (1971).

Floral associations.—Found associated almost exclusively with *Pteronia pomonae* Merxm., Asteraceae).

Nesting.—Unknown.

Quartzinia pulawskii Gess, new species
(Fig. 14)

Diagnosis.—Small to medium sized (3.0–3.6 mm). Fore wing with *Cu*_{1a} and *2m-cu* present but attenuate, much thinner than other veins, and with *2m-cu* interrupted before reaching *M*. Tegula rounded posteriorly. Male with femora and tibiae robust; fore tibia (Fig. 14) posteriorly excavate and narrowed in distal half; middle and hind femora antero-ventrally swollen.

Description.—*Female*: Black. The following are various shades of yellowish-white: underside of antenna (in part); bottom of ocular sinus; streak on temple behind upper part of eye; hind margin of pronotum (to postero-dorsal angle); large, diffuse

area on humeral angle; streak at top of mesopleuron; anterior and posterior parts of tegula (median part testaceous); broad posterior band on disk of scutellum; scutellar lamella laterally; propodeal angle; posterior bands (expanded medially and laterally reaching or almost reaching sides) on terga I–V; posterior two-thirds of tergum VI; narrow posterior bands (in different specimens variously effaced) on sterna I–V; apex of femur, tibia and tarsomeres (latter progressively darkened; claws brown). Ferruginous are: distal half of mandible; upper side of antenna; margin of pale markings on mesosoma; anterior margin of pale posterior bands of terga; sterna (in part, particularly apical half of sternum VI). Wings sub-hyaline; veins brown.

Length 3.0–3.4 mm (average of 3: 3.3 mm); length of fore wing 2.1–2.4 mm (average of 3: 2.2 mm); hamuli 4.

Head in front view $1.2 \times$ as wide as long; POL: OOL = 1: 0.7; clypeus $1.4 \times$ as wide as long; anterior margin very shallowly emarginate; antero-lateral angles rounded.

Clypeus, frons and vertex almost matt, microsculptured (shagreened) with very indistinct, scattered, small punctures; mesonotum and scutellum moderately shiny, microsculptured, with distinct, scattered, small punctures; terga moderately shiny.

Male.—In coloration and markings similar to female but differing in the following respects: labrum varying from testaceous to yellowish-white; clypeus (other than for testaceous anterior margin and several small, diffuse, shadowy maculae, the most noticeable being a pair on lower half) and large sub-oval marking (including minute, dark, median spot) on lower half of frons and confluent (except for narrow black suture) with clypeus, yellowish-white; pale marking in ocular sinus larger.

Length 3.4–3.6 mm (average of 3: 3.5 mm); length of fore wing 2.2–2.4 mm (average of 3: 2.3 mm); hamuli 4.

Labrum inconspicuously carinate.

Tergum VII laterally obtusely angular, apically with a V-shaped incision, the lobes defining the latter sub-lamellate and narrowly rounded. Sternum II slightly swollen laterally; sternum VII depressed.

Femora and tibiae more robust than those of female; fore tibia (Fig. 14) posteriorly excavate and narrowed in distal half; middle and hind femora antero-ventrally swollen.

Etymology.—Named after Wojciech J. Pulawski of the California Academy of Sciences, collector of the present species and a much esteemed colleague and friend.

Material examined.—Holotype: ♂, NAMIBIA: Omaruru District, 20km NE Hentiesbaai (21°58'S 14°22'E), 10.xii.1996 (W. J. Pulawski) [CAS]. Paratypes: NAMIBIA: Omaruru District, 20km NE Hentiesbaai (21°58'S 14°22'E), 10.xii.1996 (W. J. Pulawski) 17 ♀♀, 29 ♂♂ [12 ♀♀, 24 ♂♂ CAS, 5 ♀♀, 5 ♂♂ AMG].

Geographic distribution.—Known only from a single locality in the Central Namib of Giess (1971).

Floral associations.—Not recorded.

Nesting.—Unknown.

Quartinia setosa Gess, new species

Diagnosis.—Small to medium sized (3.2–3.8 mm). Fore wing with Cu_{1a} and 2*m-cu* present but attenuate, much thinner than other veins, and with 2*m-cu* interrupted before reaching M. Tegula rounded, with posterior inner corner angular but not inwardly produced. Both sexes predominantly black with yellowish-white markings and with noticeable, semi-erect, long, fine setae on terga.

Description.—*Female*: Black. The following are various shades of yellowish-white: underside of antennal club; narrow streak on temple behind upper part of eye; narrow anterior margin of pronotum and postero-dorsal angle of same, large humeral spot; tegula anteriorly and posteriorly (intermediate region testaceous); large spot anteriorly on mesopleuron; postero-medial marking on disk of scutellum; scutellar

lamella laterally (area posterior to marking on disk dark); propodeal angle; narrow posterior bands, reaching sides, on terga I–V; very narrow posterior band on sternum IV; apex of femur, entire (or most of) tibia and all but ultimate tarsomere of all legs. Reddish-brown are: mandibles (distally); scape, pedicel and intermediate flagellomeres; posterior margin of tergum VI. Wing membrane hyaline; veins brown.

Length 3.6–3.8 mm; length of fore wing 2.6–2.7 mm; hamuli 4–5.

Head in front view 1.28 × as wide as long, very finely microreticulate (shagreened), matt; clypeus apunctate; frons with inconspicuous small, shallow punctures separated by their width or less; vertex with punctures slightly larger and more definite than those of frons; POL: OOL = 1: 0.7. Clypeus 1.3 × as wide as long; anterior margin emarginate; antero-lateral angles rounded. Mesosoma microreticulate with punctures larger and more obvious than those on head; punctures on mesonotum less closely set than those on pronotum; parapsidal furrows obvious. Gaster with terga noticeably setose.

Male: Black. Yellowish-white markings as in female, with in addition: mandibles (distally); labrum; disk of clypeus; pair of small spots on frons immediately above clypeo-frontal suture; distal half of tergum VII.

Length 3.2 mm; length of fore wing 2.0 mm; hamuli 4–5.

Structurally very similar to female and like it with noticeably setose terga.

Etymology.—The name *setosa* serves to draw attention to the unusually setose terga of both sexes.

Material examined.—Holotype: ♀, NAMIBIA: Sperrgebiet, S of Grillettal on main north/south road (27.08S 15.25E), 9.ix.2005 (F. W. and S. K. Gess) (visiting yellow flowers of *Pteronia glabrata* L.f., Asteraceae) [AMG]. Paratypes: NAMIBIA: same locality, date and collectors as holotype, 19 ♀, 2 ♂♂ (15 ♀♀, 2 ♂♂ visiting yellow flowers of *Pteronia glabrata*; 3 ♀♀ visiting yellow flowers of *Pteronia pomonae* Merxm., Asteraceae;

1 ♂ visiting white flowers with pink flush of *Aridaria* sp., Aizoaceae: Mesembryanthema) [AMG].

Geographic distribution.—Known from Namibia, from a single locality in the west of the Desert and Succulent Steppe (Winter rainfall area) of Giess (1971).

Floral associations.—Almost exclusively found visiting the flowers of *Pteronia* species (Asteraceae); the only exception being one specimen visiting the flowers of *Aridaria* sp. (Aizoaceae: Mesembryanthema) which plant was growing next to the *Pteronia* plants.

Nesting.—Unknown.

Introduction to and discussion of the *tuberculifera* species group. (Figs 15–17)

The following three species, *Q. tuberculifera*, *Q. tuberculiventris* and *Q. tuberculiventroides*, here associated as the *tuberculifera* species group, exhibit male secondary sexual characters which not only support a close relationship between them but also set them apart from all other species of *Quartinia*.

The first of these characters, as exemplified by *Q. tuberculiventris*, concerns the presence and the form of the tubercle on sternum I (Figs 15, 16). In itself the presence of a tubercle is by no means unique for, whereas not of universal occurrence, a tubercle of one form or another does occur in various species (for example *Q. conchicola* Gess, *Q. namaqua* Gess, *Q. obibensis* Gess and *Q. strucki* Gess); rather it is in its nature that the tubercle differs from those of other species. In all three species the tubercle is spout-like in shape, formed of the pronounced postero-ventrally directed production of the swollen sternum I, and extends beneath and beyond the base of sternum II. The near-truncate, slightly flared end of the tubercle (the "spout"), seen from behind, is semicircular, semi-oval to horseshoe-shaped in outline and is defined at least in part by a carina.

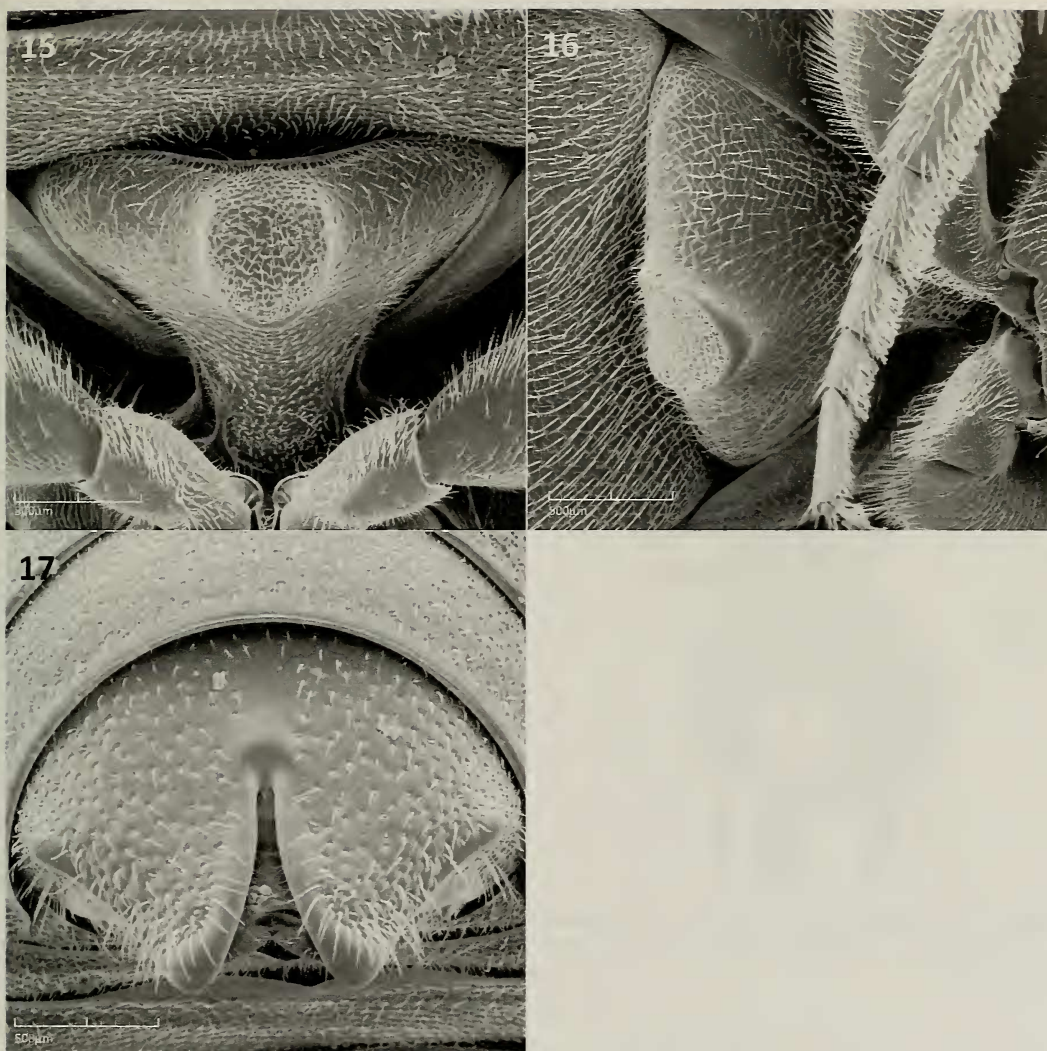
The second character, as exemplified by *Q. tuberculiventris*, concerns the form of tergum VII (Fig. 17). This is dorsally somewhat depressed medially, mid-laterally angularly produced, postero-medially deeply emarginate, and terminally with outwardly curving lobes roundly produced beyond the general apical curvature. A broad band margining the emargination and carried back onto the terminal lobes is smooth and contrasts markedly with the punctured and microsculptured surface of the rest of tergum.

All three species are readily distinguishable by their characteristic colour patterns which are remarkably consistent intraspecifically and divergent inter-specifically. This is particularly striking with respect to *Q. tuberculiventris* and *Q. tuberculiventroides* which have been found occurring sympatrically at several sites. Morphologically these two species differ in overall length (*Q. tuberculiventris* being in both sexes consistently larger), in setation (*Q. tuberculiventris* in both sexes having the clypeus, frons and vertex more obviously setose), and in the proportions of the clypeus (*Q. tuberculiventris* in both sexes having the width obviously less relative to the length).

The third species, *Q. tuberculifera*, apparently occurring allopatrically with respect to *Q. tuberculiventris* and *Q. tuberculiventroides* is morphologically distinguishable from both by the smaller malar space ($\times 0.4$ of the width of the anterior ocellus as compared with $\times 0.8$). Whereas this difference is common to both the males and females, it is more readily seen in the males on account of the pale integument of their "faces".

Quartinia tuberculifera Gess, new species (Figs 18–20)

Diagnosis.—Medium sized (3.8–4.5 mm long). Fore wing with Cu1a and 2m-cu thin, the latter interrupted before reaching M. Tegula with posterior inner corner round-



Figs 15–17. *Quartinia tuberculiventris* ♂: 15, sternum I, postero-ventral view, showing tubercle; 16, sternum I, ventro-lateral view, showing tubercle; 17, tergum VII, dorsal view.

ed but somewhat inwardly produced; yellowish (except for dark testaceous discal spot). Male with spout-like tubercle on sternum I. Both sexes with malar space $0.4 \times$ width of anterior ocellus (more readily seen in male than in female).

Description.—*Female* (Fig. 19): Black. The following are yellowish-white darkening to light ferruginous especially at margins of markings: streak behind eye on upper half of the gena (marking never produced onto vertex); narrow crescent-shaped marking at bottom of ocular sinus; in one specimen

diffuse spots at clypeo-frontal suture and on sides of clypeus; underside of antennal club; humeral angle, hind margin (medially) and dorso-posterior angle of pronotum; potentially four longitudinal streaks posteriorly on mesoscutum, namely a medial pair in posterior third immediately anterior to scutellum (short, anteriorly wedge-shaped and pointed if present, in many specimens very reduced or totally absent) and a lateral pair flanking tegulae (present in only one specimen); in some specimens a small spot on axilla; tegula (except for

18



19



20



Figs 18–20. *Quartinia tuberculifera*: 18, ♂, dorsal view ($\times 12$); 19, ♀, head, front view ($\times 26$); 20, ♂, head, front view ($\times 26$).

testaceous median region and lateral and posterior rim); disk of scutellum (except for convexly curved or bilobed baso-medial black marking; black in some specimens expanded and leaving only a small postero-medial pale mark); scutellar lamella; narrow oblique streak at top of mesopleuron; propodeal angles; terga I - VI (lightest in a narrow band across hind margins and progressively darkening anteriorly); streaks on distal half of femur of all legs, streaks on tibia of all legs.

Length 3.9–4.5 mm (average of 5 = 4.22 mm); length of fore wing 2.7 mm; hamuli 3.

Head in front view $1.26 \times$ as wide as long (average of 3; range 1.24–1.28).

POL: OOL = 1: 0.8. Clypeus $1.68 \times$ as wide as long (average of 3; range 1.67–1.70). Frons and vertex not obviously setose (viewed tangentially to surface of integument) sparsely covered with short (length much shorter than diameter of ocellus), fine, semi-erect to erect, slightly curved setae. Pilosity on clypeus much denser than that on frons and vertex.

Frons and vertex somewhat shiny, only moderately closely punctured; punctures round bottomed, not noticeable reflective; interstices between the punctures of variable width but commonly equal to or exceeding puncture width, shagreened, noticeably reflective. Clypeus without punctures, matt, very finely shagreened.

Male (Figs 18, 20): Black. The following are yellowish-white darkening to light ferruginous especially at margins of markings: mandible (except base ventrally and teeth); labrum; clypeus; irregularly shaped pair of supraclypeal markings (occasionally fused) on lower half of frons; continuous marking from bottom of ocular sinus (where widened) down inner orbit (where narrow), across malar area, to bottom of gena (where produced around mandibular insertion and up lower part of occipital carina); streak behind top of eye; antenna (except progressively darkened dorsal aspect and almost totally dark last two flagellomeres); humeral angle, hind margin (medially) and dorso-posterior angle of pronotum; tegula (except for testaceous median region); small postero-medial spot on scutellum and medially interrupted lamella of same; wedge-shaped marking at top of mesopleuron; propodeal angles (variously developed); ill-defined posterior bands on terga I–VI; fore- and middle femora and tibiae predominantly; apex of hind femur and base and apex of hind tibia.

Length 3.8–4.2 mm (average of 6 = 4.0 mm); length of fore wing 2.7 mm.

Head in front view $1.27 \times$ as wide as long (average of 3; range 1.24–1.31). POL: OOL = 1: 0.8. Clypeus $1.58 \times$ as wide as

long (average of 3; range 1.56–1.61); malar space $0.4 \times$ width of anterior ocellus.

Sternum I with its tubercle and tergum VII as described above for the *tuberculifera* species group.

Etymology.—The name, *tuberculifera*, meaning tubercle-bearing, draws attention to the tubercle on sternum I of the male.

Material examined.—Holotype ♂, NAMIBIA: Khorixas (15 km NW (*sic*, should read NE) of Twyfelfontein, Pad 2612) [20°32'49" S, 14°24'02" E], 24.xi.1994 (M. Kuhlmann) [Coll. M. Kuhlmann, London]. Paratypes: NAMIBIA: Khorixas (15 km NW (*sic*, should read NE) of Twyfelfontein, Pad 2612) [20°32'49" S, 14°24'02" E], 24.xi.1994 (M. Kuhlmann), 33 ♀♀, 6 ♂♂ [27 ♀♀, 4 ♂♂ Coll. M. Kuhlmann, London; 6 ♀♀, 2 ♂♂ AMG].

Geographic distribution.—Known from Namibia from a single locality in the Mopane Savanna of Giess (1971).

Floral associations.—Not recorded on data labels. In answer to a query with regard to the flowers on which the specimens were collected, Kuhlmann on 2 Nov. 2001 wrote that they were on a "blue Lamiaceae of 30–50 cm height". It is believed by the author and S. K. Gess that the plant was probably *Ocimum canum* Sims on which they have collected other Masarinae in Namibia.

Nesting.—Unknown.

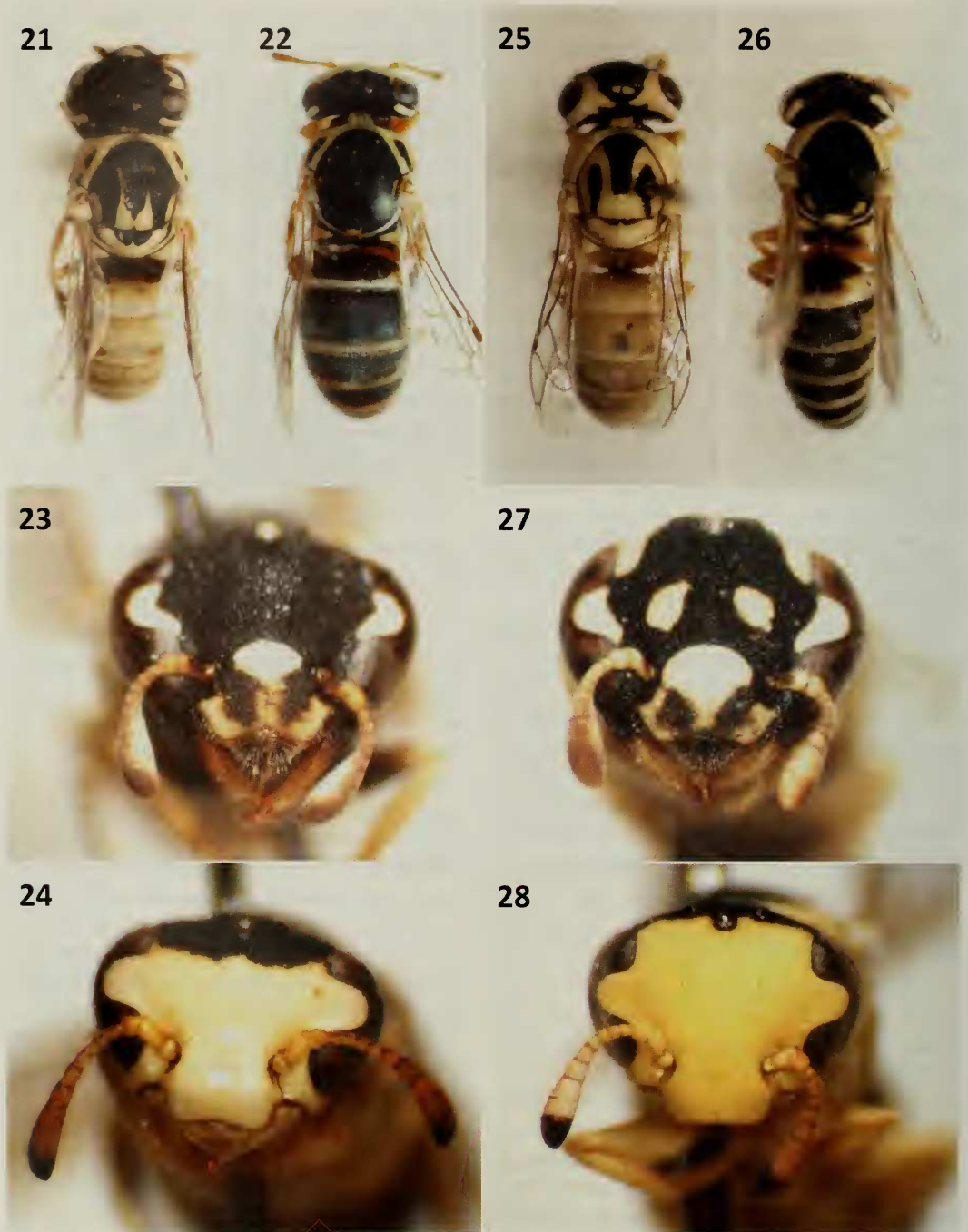
Quartinia tuberculiventris Gess,
new species

(Figs 15–17, 21–24)

Diagnosis.—Medium sized to large (3.9–5.0 mm long). Fore wing with Cula and 2*m-cu* thin, the latter interrupted before reaching M. Tegula with posterior inner corner markedly angular and somewhat inwardly produced, yellowish-white (except for pale testaceous discal spot). Male with spout-like tubercle on sternum I. Both sexes with malar space $0.8 \times$ width of anterior ocellus (more readily seen in male than in female) with clypeus, frons and vertex obviously setose; streak behind eye on upper half of gena not produced onto vertex (nor in female produced down

upper inner orbit); pale portion of "face" of male not rising laterally much above top of ocular sinus and medially at most just reaching median ocellus (in most specimens separated from median ocellus by at least one ocellar diameter if not more); mesonotum of female with lateral yellow marking (if present) short and in most specimens not exceeding anterior margin of tegula and with juxta-medial yellow marking short and wedge-shaped but, if produced, with anterior elongation very narrow and at most slightly outcurved apically; lateral and juxta-medial longitudinal markings of each side not meeting anteriorly in a smoothly rounded loop.

Description.—*Female* (Figs 21, 23): Black. The following are yellowish-white: in all specimens a streak behind eye on upper half of the gena (marking never produced onto vertex); in some specimens a variously developed crescent-shaped transverse band at bottom of gena above mandibular articulation; in a few specimens a very narrow band or series of minute spots along hind margin of eye, connecting or almost connecting above streak and transverse band (if present); in all specimens the ocular sinus; in a few specimens a narrow extension of sinus marking downwards along inner orbit to just above level of top of antennal socket, or two or more minute spots next to inner orbit at level of antennal socket, or a combination of the extension and the spots to form a narrow interrupted band along inner orbit; in a very few specimens minute isolated spots on the frons (medially immediately above the clypeus or next to the inner orbit above the sinus); markings on clypeus composed of a transverse basal band (exceptionally absent, or formed of irregular spots, or very narrow but entire, or lens-shaped, or trilobed, or triangularly produced towards anterior margin), broad lateral streaks or irregular spots below antennal sockets, and a narrow band (absent in some specimens) across anterior margin [in many specimens combining to form an anchor-shaped fig-



Figs 21–28. *Quartinia tuberculiventris*: 21, ♀, dorsal view ($\times 12$); 22, ♂, dorsal view ($\times 12$); 23, ♀, head, front view ($\times 26$); 24, ♂, head, front view ($\times 26$). *Quartinia tuberculiventroides*: 25, ♀, dorsal view ($\times 12$); 26, ♂, dorsal view ($\times 12$); 27, ♀, head, front view ($\times 26$); 28, ♂, head, front view ($\times 26$).

ure or exceptionally, if very extensive, spreading over entire disk but for a pair of narrow oblique black streaks]; in many specimens two diffuse spots basally on labrum; underside of antennal club; hind margin and humeral angle of pronotum, or most of dorsal aspect of pronotum (with exception of broad and entire, or narrow and interrupted, or ill-defined and almost effaced lateral longitudinal streak), or entire dorsal aspect of pronotum; four longitudinal streaks posteriorly on mesoscutum, namely a medial pair in posterior third immediately anterior to scutellum (basally well separated, or touching, or broadly fused, anteriorly wedge-shaped and pointed, in some specimens very narrowly produced anteriorly over middle third of mesoscutum and terminally slightly outwardly curved and then together somewhat lyre-shaped) and a lateral pair flanking tegulae (in some specimens absent, in most specimens well developed and in one or two specimens anteriorly produced beyond level of postero-dorsal angle of pronotum); small spot on axilla; tegula (except for testaceous median region and lateral and posterior rim); disk of scutellum (except for convexly curved or bilobed baso-medial black marking); scutellar lamella; metanotum (in part); two or three markings on upper half of mesopleuron; dorsal aspect and lateral angles of propodeum; terga I–VI (except for lower half of anterior surface of tergum I and for faint transverse markings–brownish laterally on I–V and blackish medially on II–V); postero-medial part of sterna II–V and entire VI; a spot on mesocoxa (in some specimens); streaks on distal half of femur of all legs, tibiae of all legs; hind basitarsus [other tarsomeres progressively darkened distally].

Length 3.9–5.0 mm (average of 78: 4.3 mm); length of fore wing 3.2 mm; hamuli 4–5.

Head in front view $1.32 \times$ as wide as long (average of 3; range 1.31–1.34). POL: OOL = 1: 0.8. Frons and vertex obviously

setose (viewed tangentially to surface of integument), densely covered with moderately long (length approximating diameter of ocellus), moderately coarse, semi-erect to erect, slightly curved setae; very closely punctured; punctures flat bottomed, noticeably reflective in a circle around origin of seta; interstices in between punctures much narrower than puncture width, shagreened, only moderately reflective. Clypeus $1.5 \times$ as wide as long (average of 3; range 1.46–1.52); pilosity as on frons and vertex; without punctures, shagreened.

Male (Figs 22, 24): Black. The following are various shades of yellow or yellowish-white: mandibles (except ferruginous tips), labium and maxillae; entire labrum and clypeus; most of frons (laterally to or slightly above level of top of ocular sinus and medially well separated from anterior ocellus or at most just reaching it); streak behind eye on upper half of gena (not produced onto vertex—that is not crossing an imaginary line drawn straight back from inner eye margin to occiput); in all specimens malar area and bottom of gena; in some specimens a very narrow band along hind margin of eye joining upper and lower genal markings; antennae (except for variously ferruginous flagellomeres in some specimens and black ultimate flagellomere in all specimens); most of pronotum (except transverse black streak at bottom of anterior face and in some specimens variously sized black lateral streak); in minority of specimens two or four poorly developed longitudinal streaks on mesoscutum, namely a medial pair (if present, barely indicated, or at most short, wedge-shaped and basally well separated) and a lateral pair flanking tegulae (if present, narrow) [in majority of specimens one or other pair or both pairs are totally absent]; in minority of specimens a small mark on axilla; tegula (except for testaceous median region and lateral and posterior rim); in all specimens a postero-medial spot on scutellar disk, in some anterolateral spots also, and in some

a fusion of the spots along hind margin; scutellar lamella; metanotum wholly or in part; at least anterior and lateral aspects of mesopleuron (in some specimens posterior aspect also); dorsal and lateral angles of propodeum; narrow transverse posterior bands (widened laterally on terga I–IV) on terga I–VI; sterna I–III or IV; coxa, trochanter, femur, tibia (except black streak on tibia of hind leg) and at least basitarsus (in most specimens) of all legs [other tarsi progressively darkened distally].

Length 4.1–5.0 mm (average of 23: 4.6 mm).

Head in front view $1.37 \times$ as wide as long (average of 3; range 1.36–1.37). POL: OOL = 1: 0.8. Clypeus $1.42 \times$ as wide as long (average of 3; range 1.40–1.43); malar space $0.8 \times$ width of anterior ocellus.

Sternum I with its tubercle and tergum VII as described above for the *tuberculifera* species group.

Etymology.—The name *tuberculiventris*, denoting a tuberculate underside, draws attention to the tubercle on sternum I of the male.

Material examined.—Holotype: ♂, NAMIBIA: 113 km N[NW] of Swakopmund (21.51S 14.05E), 18.iii.2000 (F. W. and S. K. Gess) (visiting white flowers of *Brownanthus kuntzei* (Schinz) Ihlenf. and Bittrich, Aizoaceae: Mesembryanthema. Paratypes: NAMIBIA: 113 km N[NW] of Swakopmund (21.51S 14.05E), 18.iii.2000, 20 ♀♀, 8 ♂♂ (visiting white flowers of *Brownanthus kuntzei*); same locality, 21.iv.2002, 4 ♀♀, 3 ♂♂ (visiting white flowers of *Brownanthus kuntzei*); 110 km N[N]W of Swakopmund (21.50S 14.05E), 15.iii.1999, 39 ♀♀, 30 ♂♂ (visiting white flowers of *Brownanthus kuntzei*); 10 km N of Swakopmund at wireless mast (22.35S 14.32E), 21.iii.1997, 39 ♀♀, 15 ♂♂ (2 ♀♀ visiting white flowers of *Psilocaulon salicornioides* (Pax) Schwantes, Aizoaceae: Mesembryanthema; 33 ♀♀, 12 ♂♂ visiting white flowers of *Brownanthus kuntzei*; 4 ♀♀, 3 ♂♂ on ground); same locality, 11.iv.1998 1 ♂ (visiting white flowers of *Brownanthus kuntzei*); 97 km by road from Swakopmund to Usakos (22.10S, 15.10E), 16.iii.2000, 1 ♀ (visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae)—(all F

W. and S. K. Gess) [all AMG]; Swakopmund Dist., Rössing Mine (22.28S 15.02E), 1.iii.–10.iv.1984, 1 ♀; same locality, 31.vii.–28.viii.1984, 1 ♀; Upper Panner Gorge (22.29S 15.01E), 10.iv.–8.v.1984, 1 ♀; same locality, 23.x.–20.xi.1984, 1 ♀ - (all J. Irish; H. Liessner) [all NNIC].

Geographic distribution.—Known only from Namibia, from the seaboard and interior of the Central Namib of Gess (1971).

Floral associations.—Along the seaboard of the Central Namib almost exclusively associated with *Brownanthus kuntzei*; along drainage lines within the Central Namib found associated with *Zygophyllum simplex*.

Nesting.—Unknown.

Quartinia tuberculiventroides Gess,
new species
(Figs 25–28)

Quartinoides sp. #1. (Wharton, 1980)

Diagnosis.—Small to medium sized (3.4–4.2 mm long). Fore wing with Cu1a and 2*m-cu* thin, the latter interrupted before reaching M. Tegula with posterior inner corner inwardly produced. Male with spout-like tubercle on sternum I. Both sexes with malar space $0.8 \times$ width of anterior ocellus (more readily seen in male than in female); clypeus, frons and vertex not obviously setose; streak behind eye on upper half of gena produced onto vertex (and in female produced down upper inner orbit); pale portion of "face" of male rising laterally to near top of inner orbits and medially partially surrounding median ocellus and at least reaching posterior ocelli (which it may exceed); mesonotum of female with both lateral and juxta-medial yellow markings anteriorly produced, the anterior elongation of the latter wide; lateral and juxta-medial longitudinal markings of each side in almost all specimens meeting anteriorly in a smoothly rounded loop.

Description.—*Female* (Figs 25, 27): Black. The following are yellowish-white: in all specimens a streak behind eye on upper

half of the gena, produced onto the vertex behind top of eye [in most specimens markings of each side separate but in some specimens interruptedly connected by a number of irregular spots or joined to form a broad transverse band crossing the vertex behind the posterior ocelli] and with a ramus flanking the inner orbit produced down onto face on which in some specimens it reaches no further than to the top of the frons but in others extends down the frons as a broad band (occasionally interrupted and represented below by an isolated spot) to a level above or at top of ocular sinus and broadly separated, almost touching, or broadly fused with marking in sinus; in all specimens the ocular sinus; in some specimens two or more minute spots next to eye margin at level of antennal socket or marking in sinus downwardly produced as an unbroken band to this level or even to mandibular articulation; in some [but by no means all] specimens additional markings on the frons in the form of scattered irregular and bilaterally asymmetrical spots, or a fusion of spots on the lower half of frons to form an oval or an inverted Y, or a fusion and expansion of spots to form a broad, medially upwardly curved, transverse band broadly fused with markings in ocular sinuses and with bands flanking upper orbits (but excepting a small black area just outside ocular sinus), or an even greater expansion to cover entire frons (but excepting a black vertical streak below posterior ocellus, a small black area just outside ocular sinus, and black spots at the bottom of the frons, one medially and one above antennal socket); in some specimens a poorly developed crescent-shaped transverse band at bottom of gena above mandibular articulation; in a few specimens a very narrow band or series of minute spots along hind margin of eye, almost connecting streak at top of gena to transverse band at bottom; markings on clypeus composed of a transverse basal band (exceptionally absent, or formed of irregular spots, or very narrow

but entire, or lens-shaped, or triangularly produced towards anterior margin), broad lateral streaks or irregular spots (absent in some specimens) below antennal sockets, and a narrow band (absent in some specimens) across anterior margin [in some specimens combining to form an anchor-shaped figure or exceptionally, if very extensive, spreading over entire disk but for a pair of narrow oblique black streaks; conversely, if melanistic, clypeus may be without any markings or may have only the transverse basal band]; in many specimens two diffuse spots basally on labrum; underside of antennal club entire; dorsal aspect of pronotum; four longitudinal streaks on mesoscutum, namely a medial pair broadly fused basally and a lateral pair flanking tegulae; medial and lateral streaks of each side broadly anteriorly produced and in all but very exceptional specimens meeting uninterruptedly in a smoothly rounded loop on anterior third of mesoscutum; most or all of axilla; tegula (except for testaceous median region and lateral and posterior rim); disk of scutellum (except for variously reduced to almost totally effaced bilobed baso-medial black marking); scutellar lamella; metanotum; upper half or more of mesopleuron; upper half or more of metapleuron; entire propodeum; terga I–VI (except in some specimens the very bottom of anterior surface of tergum I and in some specimens very faint brownish transverse markings laterally on terga II–V); diffuse postero-lateral and postero-medial markings on sterna II–V and entire VI; variously developed spots on coxae of all legs; trochanters (in part); distal half or more of femur of all legs, tibia of all legs; basitarsi of at least middle and hind legs [other tarsomeres progressively darkened distally].

Length 3.4–4.2 mm (average of 68: 3.7 mm); length of fore wing 2.6 mm; hamuli 4–5.

Head in front view $1.33 \times$ as wide as long. POL: OOL = 1: 0.8.

Frons and vertex not obviously setose (viewed tangentially to surface of integument), densely covered with short (length much shorter than diameter of ocellus), fine, semi-erect to erect, slightly curved setae; very closely punctured; punctures non-reflective; interstices between punctures much narrower than puncture width, shagreened, only moderately reflective. Clypeus $1.65 \times$ as wide as long (average of 3; range 1.63–1.68); pilosity as on frons and vertex; without punctures, shagreened.

Male (Figs 26, 28): Black. The following are various shades of yellow or yellowish-white: mandibles (except ferruginous tips), labium and maxillae; entire labrum, clypeus and frons; supra-facial portion of vertex to near top of inner orbits and at least to lower margin of posterior ocelli but in some specimens extending to behind posterior ocelli (leaving a transverse black area between them); streak behind eye on upper half of gena slightly produced onto vertex (that is crossing an imaginary line drawn straight back from inner eye margin to occiput) and, depending upon extent of supra-facial marking, broadly separated, almost touching or touching latter; in all specimens malar area and bottom of gena; in some specimens a narrow band along hind margin of eye joining upper and lower genal markings; antennae (except black last flagellomere); entire pronotum (except transverse black streak at bottom of anterior face); in majority of specimens two or four variously developed longitudinal streaks on mesoscutum, namely a medial pair (if present, barely indicated, or moderately developed but basally well separated, or well developed and basally broadly fused) and a lateral pair flanking tegulae (if present, moderately developed, or well developed): medial and lateral pair of streaks of each side, if well developed, broadly anteriorly produced and meeting uninterruptedly in a smoothly rounded loop on anterior third of mesoscutum; in some specimens most or all of axilla; tegula

(except for testaceous median region and lateral and posterior rim); postero-medial spot or postero-medial and antero-lateral spots on disk of scutellum or entire scutellum (except for variously reduced to almost totally effaced bilobed baso-medial black marking); scutellar lamella; metanotum; entire mesopleuron; part of or entire metapleuron; entire propodeum (except pair of black markings on declivous face in darker specimens); transverse posterior bands (widened laterally on terga I–III) on terga I–VI in darker specimens; almost entire tergum I, greater part of terga II–VII (except base of II and apical half of VII and paired submedial and lateral spots on II–VI) in lighter specimens; sterna I–IV or V; coxa, trochanter, femur, tibia (except black streak on tibia of hind leg in some specimens) and at least basitarsus (in most specimens) of all legs [other tarsi progressively darkened distally].

Length 3.9–4.0 mm.

Head $1.29 \times$ as wide as long (average of 3; range 1.28–1.33). POL: OOL = 1: 0.8. Clypeus $1.56 \times$ as wide as long (average of 3; range 1.53–1.59); malar space $0.8 \times$ width of anterior ocellus.

Sternum I with its tubercle and tergum VII as described above for the *tuberculifera* species group.

Etymology.—The name, *tuberculiventroides*, serves to draw attention to the general similarity and relatedness of this species to *Q. tuberculiventris* and thereby to their shared possession of a tubercle on sternum I of the male.

Material examined.—Holotype: ♂, NAMIBIA: 33 km by road from Swakopmund to Usakos, near Rössing Mountain (22.34S, 14.49E), 15.iv.2002 (F. W. and S. K. Gess) (visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae) [AMG]. Paratypes: NAMIBIA: 110 km N[N]W of Swakopmund (21.50S 14.05E), 15.iii.1999, 69 ♀♀, 2 ♂♂ (28 ♀♀ visiting white flowers of *Brownanthus kuntzei* (Schinz) Ihlenf. and Bittrich, Aizoaceae: Mesembryanthema; 10 ♀♀, 2 ♂♂ visiting yellow flowers of *Tripteris microcarpa* Harv. [on labels as *Senecio* sp.], Aster-

aceae; 2 ♀♀ visiting yellow flowers of *Myxopappus hereroensis* (O.Hoffm.) Källersjö [on labels as "button" capitulae], Asteraceae; 29 ♀♀ visiting yellow flowers of *Galenia papulosa* (Eckl. and Zeyh.) Sond., Aizoaceae: non-Mesembryanthema; 10 km N of Swakopmund at wireless mast (22.35S 14.32E), 21.iii.1997, 11 ♀♀, 1 ♂ (1 ♀, 1 ♂ visiting white flowers of *Psilocaulon salicornioides* (Pax) Schwantes, Aizoaceae: Mesembryanthema; 2 ♀♀ visiting white flowers of *Brownanthus kuntzei*; 8 ♀♀ on ground); Swakop River bed on road to Goanikontes (22.41S 14.35E), 11.iv.1998, 3 ♀♀, 1 ♂ (visiting white flowers of *Psilocaulon salicornioides*); plains south of Goanikontes (22.42S 14.47E), 16.iv.2002, 19 ♀♀, 1 ♂ (16 ♀♀, 1 ♂ visiting pink flowers of *Leucosphaera bainsii* (Hook. F.) Gieg., Amaranthaceae; 1 ♀ visiting yellow flowers of *Zygophyllum simplex* L., Zygophyllaceae; 2 ♀♀ visiting white flowers of *Zygophyllum stapfii* Schinz); Rössing Mine (22.26S 15.03E), 22.iv. 2002, 2 ♀♀ (visiting white flowers of *Heliotropium tubulosum* E. Mey. ex DC., Boraginaceae); 16.5 km by road from Swakopmund to Usakos (22.37S, 14.40E), 14.iii.2000, 17 ♀♀, 2 ♂♂ (visiting yellow flowers of *Tripteris microcarpa*) [on labels as yellow fls Asteraceae]; 33 km by road from Swakopmund to Usakos, near Rössing Mountain (22.34S, 14.49E), 15.iii.2000, 16 ♀♀ (14 ♀♀ visiting yellow flowers of *Tripteris microcarpa* [on labels as yellow fls Asteraceae]; 1 ♀ visiting white flowers of *Galenia africana* L.); same locality, 15.iv.2002, 27 ♀♀, 28 ♂♂ (2 ♀♀, 6 ♂♂ visiting yellow flowers of *Tripteris microcarpa* [on labels as *Osteospermum microcarpum*]; 9 ♀♀, 1 ♂ visiting white flowers of *Galenia africana*; 14 ♀♀, 19 ♂♂ visiting yellow flowers of *Zygophyllum simplex*; 1 ♂ visiting yellow flowers of Cucurbitaceae; 2 ♀♀ visiting pink flowers of *Indigophora* sp., Fabaceae: Papilionoideae; same locality, 28.iv.2002, 6 ♀♀, 4 ♂♂ (1 ♀ visiting yellow and orange flowers of *Adenolobus pechuelii* (Kuntze) Torre and Hillc., Fabaceae: Caesalpinoideae; 3 ♀♀, 1 ♂ visiting yellow flowers of *Tripteris microcarpa* [on labels as *Osteospermum microcarpum*]; 3 ♂♂ visiting yellow flowers of *Zygophyllum simplex*; 2 ♀♀ visiting white flowers of *Zygophyllum stapfii*); same locality, 31.iii.2004, 2 ♀♀ (1 ♀ visiting yellow flowers of *Tripteris microcarpa*; 1 ♀ visiting yellow flowers of *Zygophyllum simplex*); 74 km by road from Swakopmund to

Usakos (22.19S 15.06E), 15.iii.2000, 1 ♀ (visiting yellow flowers of *Tripteris microcarpa*); 97 km by road from Swakopmund to Usakos (22.10S, 15.10E), 16.iii.2000, 1 ♀ (visiting yellow flowers of *Zygophyllum simplex*)—(all F. W. and S. K. Gess) [all AMG]; Swakopmund Dist., Upper Ostrich Gorge (22.29S 14.59E), 13.iii.–10.iv.1984, 1 ♀, 1 ♂; Upper Panner Gorge (22.29S 15.01E), 10.iv.–8.v.1984, 1 ♂; same locality, 18.xii.1984–15.i.1985, 2 ♂♂—(all J. Irish; H. Liessner) [all NNIC]; 5 km N of Gobabeb [circa 23.34S 15.03E], 17.xii.1978 (Wharton), 1 ♀ (on *Zygophyllum simplex*) (= Wharton's *Quartinia* sp.#1) [Gobabeb Research Station]; Namib Naukluft Park, Homeb [23.38S 15.11E], 23.i.1988 (R. Miller and L. Stange), 1 ♀ [FSCA].

Geographic distribution.—Known only from Namibia, from the seaboard and interior of the Central Namib of Gess (1971).

Floral associations.—Along the seaboard of the Central Namib chiefly associated with *Brownanthus kuntzei*, *Galenia papulosa* and *Tripteris microcarpa*; along drainage lines within the Central Namib chiefly associated with *Tripteris microcarpa*, *Zygophyllum simplex* and *Galenia africana*.

Nesting.—Unknown.

ADDENDUM TO SPECIES DESCRIBED IN GESS (2007)

Quartinia bonaespei Gess

Quartinia bonaespei Gess, 2007: 213, figs 1, 7, ♀, ♂.

Holotype: ♂, South Africa: Western Cape: on coast 4 km north of Bloubergstrand (AMG).

Additional material examined: SOUTH AFRICA; WESTERN CAPE: Strandfontein (3418 BA) [34.04S 18.34E], 1.xi.1960 (F. Gess), 1 ♀ [SAM].

This is the Strandfontein between Mui-zenberg and Strand. The record is the first from False Bay.

Quartinia conchicola Gess

Quartinia conchicola Gess, 2007: 217, figs 2, 8, ♀, ♂.

Holotype: ♂, South Africa: Western Cape: 12 km N of Vanrhynsdorp (AMG).

Additional material examined: SOUTH AFRICA; NORTHERN CAPE: Koinaas Mines

(30.10S 17.14E), 12–17.ix.2007, 5 ♀♀, 1 ♂, 12–17.xi.2007, 2 ♀♀; ditto (30.22S 17.19E), 12–7.ix.2007, 1 ♀; ditto (30.22S 17.20E), 8–13. vii. 2007, 2 ♀♀, 12–17 .ix.2007, 1 ♀, 1 ♂. (all from pan traps.) (all C. Lyons *et al.*) [all AMG]. WESTERN CAPE: near Brand-se-Baai (31.27S 18.00E), 21–25.ix.2007 (from pan trap) (C. Lyons *et al.*), 1♀ [AMG].

The above records from localities at the Koinaas Mines and from the mines near Brand-se-Baai fall within the known distribution of *Q. conchicola*. At Koinaas specimens were obtained from pan traps during the months that these were operational, July, September and November; at Brand-se-Baai one specimen was obtained during September.

Quartinia vexillata Gess

Quartinia vexillata Gess, 2007: 225, figs 4, 12, ♀, ♂. Holotype ♂, South Africa: Northern Cape: 23 km S of Alexander Bay (AMG).

Additional material examined: NAMIBIA: Diamond Area 1 [= Sperrgebiet], no locality (28.25S 16.19E), 16–29.ix.1994 (E. Marais), 5 ♀♀ (Pres[ervation] pitf[all] traps) [NNIC]; Diamond Area 1 [= Sperrgebiet], Chamaais (27.50S 15.43E), 16–29.ix.1994 (E. Marais), 1 ♀ (Pres[ervation] pitf[all] trap) [NNIC]. SOUTH AFRICA: NORTHERN CAPE: Koinaas Mines (30.10S 17.14E), 12–17.ix.2007, 6 ♀♀, 1 ♂, 12–17.xi.2007, 1 ♀; ditto (30.12S 17.15E), 12–17.xi.2007, 1 ♀; ditto (30.18S 17.18E), 12–17.ix.2007, 1 ♀; ditto (30.21S 17.18E), 12–17.ix.2007, 1 ♂; ditto (30.22S 17.19E), 12–17.ix.2007, 5 ♀♀, 12–17.xi.2007, 1♀; ditto (30.22S 17.20E), 12–17.ix.2007, 1 ♀. (all from pan traps.) (all C. Lyons *et al.*) [all AMG]. WESTERN CAPE: near Brand-se-Baai (31.22S 17.55E), 14–18.vii.2007, 1 ♀, 21–25.ix.2007, 25 ♀♀, 6 ♂♂, 17–22.xi.2007, 50 ♀♀, 2 ♂♂; ditto (31.23S 17.56E), 21–25.ix.2007, 22 ♀♀, 4 ♂♂, 17–22.xi.2007, 19 ♀♀, 1 ♂; ditto (31.25S 17.58E), 21–25.ix.2007, 1 ♀, 2 ♂♂, 17–22.xi.2007, 1 ♀; ditto (31.29S 18.01E), 14–18.vii.2007, 2 ♀♀, 21–25.ix.2007, 10 ♀♀, 6 ♂♂, 17–22.xi.2007, 1 ♀. (all from pan traps) (all C. Lyons *et al.*) [all AMG].

The above records from localities at the Koinaas Mines and from the mines near Brand-se-Baai establish a south ward ex-

tension of the hitherto known distribution of *Q. vexillata*. Previously the species was known no further south than 60 km N of Port Nolloth (28,47S 16.38E). Specimens were obtained from pan traps during the three months that these were operational, July, September and November. Though three females were obtained at Brand-se-Baai as early as July, most specimens were obtained during September and November (13 ♀♀, 2 ♂♂ and 3 ♀♀ respectively at Koinaas and 58 ♀♀, 18 ♂♂ and 71 ♀♀, 3 ♂♂ respectively at Brand-se-Baai).

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